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The Journal of the
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Volume IV AUGUST 1941 *Number* 4

A New Vitallium Cup for Arthroplasty of the Hip

FRED H. ALBEE, M.D., F.A.C.S., F.I.C.S., AND ROBERT L. PRESTON, M.D.
NEW YORK CITY

ARTHROPLASTY of the hip with the interposition of an autogenous membrane of fat and fascia lata has been proved, by years of experience, to be a trustworthy operation for the correction of bony ankylosis.

It is the opinion of the authors that, notwithstanding the proved value of the recently introduced cobalt-chromium alloy molds for arthroplasty of nonankylosed hips, an autogenous graft of fat and fascia lata is still to be preferred in cases of complete bony ankylosis.

Despite the fact that vitallium is practically indestructible, absolutely compatible with living tissues and resistant to body fluids, it nevertheless cannot resist an onslaught of infection as can the living graft. In the experience of the authors, on several occasions a low-grade local infection has occurred at one angle of the operative field, even involving a portion of the fascia, but the resistance of the living tissue, plus the immediate adherence of the graft to the host tissue, prevented and blocked the extension of the infection to other parts of the newly made joint. Thus the ultimate outcome of the operation was not seriously impaired or retarded. This property gives the autogenous membranes definite advantages over any type of nonautogenous foreign body molds.

INTRODUCTION OF THE VITALLIUM CUP

However, there are a large group of cases in which bony ankylosis has not occurred.

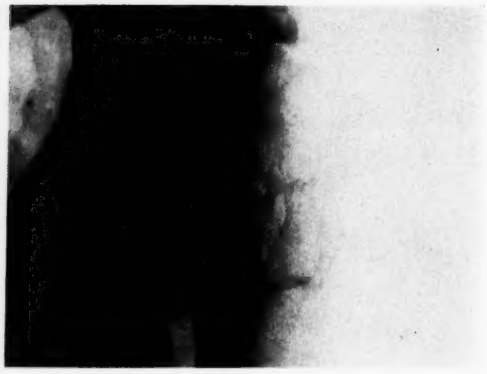

Fig. 1. Osteoarthritis of the hip with limited, painful motion, before operation.

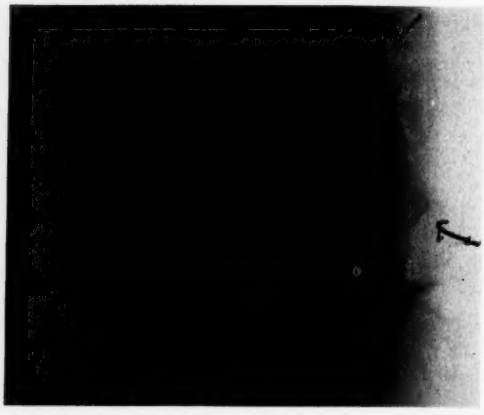

Fig. 2. The same case as Fig. 1, showing extension of osteophytes around the cut, at arrow.

Fig. 3. X-ray in semi-lateral plane of another case, showing osteophytes extending around the cup.

Vitallium molds have been extensively used in arthroplastics on these hips since the original reports of Drs. Heywood H. Hopkins and Frederick N. Zuck[1] and of Dr. M. N. Smith-Peterson.[2] In 1937, after much preliminary research with glass, viscaloid and pyrex, Dr. Smith-Peterson was forced to abandon these substances. He then resorted to the use of bakelite caps, with apparent success in one case.

Based on the research on vitallium conducted by Drs. Charles S. Venable, Walter G. Stuck and Asa Beach, as well as Dr. John W. Cook, a dentist, Dr. Smith-Peterson finally succeeded in the spring of 1938, after a considerable number of trials, in having manufactured a mold of vitallium of the required thickness and strength. In June of the same year he first inserted such a mold.

Since that time the method has been used extensively. It is the feeling of the authors that the use of the vitallium molds in arthroplasty of the hip has progressed beyond the purely experimental stage and that it has a definite place in the surgeon's armamentarium.

INDICATIONS FOR USE

The indications for the use of a vitallium mold in arthroplasty of the hip are clear. In a hip with a marked limitation of motion, there are only two operations which can be considered: arthroplasty and arthrodesis. In all cases it is desirable to rehabilitate the patient by giving him a painless, movable hip which is under good muscular control. But in many instances this is not possible because the patient is psychologically unable to carry on the postoperative corrective exercises which will restore enough muscle control to provide a stable functional hip.

Whatever the method of arthroplasty employed by the surgeon, the possibility should never be lost sight of that postoperative instability may be due to excessive

shortening of the kinesiologic hip lever.[3] If at operation this kinesiologic lever is found to be inadequate, it should be lengthened either then or at a later operation.

In a case recently observed, where the vitallium cup was placed in the hip, there was a subsequent dislocation of the hip because of the shortness of the lever at the top of the femur.

In the cases in which it is felt that stability cannot be secured because of the psychological reaction of the patient, and if contraindications are not present, arthrodesis should be done according to the technic described by Albee[4] in 1908.

Arthrodesis cannot be done if the other hip is ankylosed or badly damaged with arthritis, or if the mobility of the lumbar spine is impaired by arthritis. If arthrodesis is performed under these conditions, the arthritis in the opposite hip and the lumbar spine may be increased so much as to leave the patient badly disabled.

These considerations, therefore, make arthroplasty with the interposition of a vitallium mold the procedure of choice in all hips having markedly limited motion but not bony ankylosis, in which postoperative stability can be obtained by proper development of the muscle-lever mechanism at the top of the femur.

WEAKNESSES OF THE CUP

The relatively small experience of the authors in the employment of the vitallium cup has disclosed two weaknesses in the design of the mold previously used. That is, by virtue of the contour of the mold, there is no particular inhibitory influence against the extension outward from the site of the previous attachment of the capsule at the rim of the acetabulum of new-formed bone, or osteophytes (see Figs. 2 and 3, arrows); this may bring about either a return of ankylosis with the cup incorporated beneath or a bone blockage to free motion. (See Fig. 1, the same case as Fig. 2 before operation.) This has occurred in an uncomfortably large percentage of cases.

Fig. 4. X-ray taken during pull, with patient reclining on the table.

Fig. 5. The limb was pushed upward while this X-ray was being taken. It should be noted that there is a rotation upward of the cup and a displacement of the new head of the femur from it. There is also a large mass of bone forming from the upper portion of the rim of the acetabulum down over the mold.

The second untoward effect has resulted from the cup's acting precisely like a ten-quart pail with a rounded bottom sitting on the floor; when pressure is brought to bear upon its edges, it immediately capsizes and tips over. That is precisely what happens

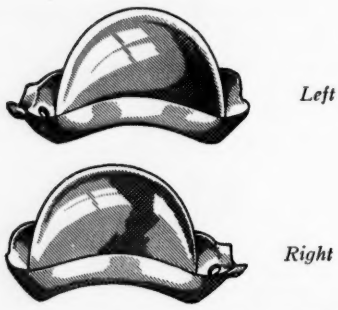

Fig. 6. Drawing of the new cup, demonstrating the fact that the cup is made from a mold of a normal acetabulum. The flanges fit about the rim and prevent instability of the cup and the proliferation of newly formed bone, or osteophytes, from the acetabular rim.

Fig. 7. X-ray of case of advanced osteoarthritis of the right hip before operation. The left hip was fused by the senior author eighteen years before.

Fig. 8. Same case as Fig. 7 six months after operation, showing the flanged cup in place. It should be noted that as far as the authors could determine, this cup is of the same relative depth as the normal acetabulum.

to the cup in the hip when there is an undue amount of laxity of the abduction weight-bearing muscles of the hip from some cause or other, usually a too-short kinesiologic lever.

Such has been the unhappy experience of one patient who has recently come under the observation of the author. After two years and two months she is still unable to walk because on the slightest weight-bearing, there is a severe jump and click at the hip, accompanied by acute pain. This is produced by the new-formed head of the femur as it displaces upward and beyond the cup, which tips over or upward (see Figs. 4 and 5). While the roentgenogram reproduced in Figure 4 was being taken, a gentle manual pull was exerted on the foot; while that in Figure 5 was being taken, a pushing upward force was made. It is noted that in Figure 5, the cup has tipped and the new femoral head has become dislocated.

AN IMPROVED VITALLIUM CUP

The authors have, therefore, a two-fold purpose in presenting this paper. First, they wish to offer a modification in contour of the Hopkins-Smith-Peterson-Venable cup. This modification is shown in Figure 6.

Secondly, the authors wish to suggest new models of reamers to facilitate in the insertion of the cup.

It should be noted that the contour of this cup has been molded to conform to the rim of a normal acetabulum, and the flanges are adapted to fit completely over the rim of the acetabulum. The contour of the flange and a bolt which fixes the flanges to the region of the anterior-inferior spine of the ilium firmly anchor the cup, so that there is no possibility of its displacement or capsizement. These same flanges also completely inhibit the possibility of a sleeve of bone, or osteophytes, growing outward and downward from the rim of the acetabulum over the neck of the femur, in that way

producing a reankylosis or a bone blockage (see Figs. 2 and 3). These cups have been made in three sizes, in accordance with the various sizes of the acetabulum.

The removal of excess bone in malum coxae senilis—in the experience of the authors the most frequent operation in which this type of arthroplasty is performed—is unusually difficult because the enormous outgrowths of bone from the rim of the acetabulum and the head of the femur make it impossible to dislocate the head until most of this excess bone has been removed. In several cases the authors have found it difficult to secure enough laxity easily to shape up the new-formed head. For this reason the reamers were designed with removable handles so that the cup portion of the reamer could be inserted into the hip joint and the handle clamped on at any place around the periphery. This permits the accurate shaping of the head and acetabulum after a very small amount of laxity has been secured.

The authors offer this report merely as a preliminary not a final one, for sufficient time has not elapsed nor have a sufficient number of cases been treated to form the basis for conclusive opinion on the subject.

SUMMARY

The use of the vitallium cup in arthroplasty of the hip has now progressed beyond the experimental stage, being the treatment of choice in all hips having a markedly limited motion but not bony ankylosis. To correct two weaknesses in the ordinary vitallium cup, the authors describe and illustrate two modifications, one an improvement in contour, the second a new type of reamer, to facilitate insertion of the cup.

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(Acknowledgment is made to the Austenal Laboratories, Inc., 34 W. Thirty-Third Street, New York City.)

RÉSUMÉ

Une nouvelle coupe de vitallium pour arthroplastie de la hanche

L'usage de la coupe de vitallium dans l'arthroplastie de la hanche a progressé maintenant au délà de l'étage expérimental, étant le traitement de choix dans tous les cas avec une grande limitation des mouvements mais pas d'anchilose des os. Les auteurs décrivent et illustrent deux modifications pour corriger deux faiblesses dans l'ordinaire coupe de vitallium, une consiste en un améliorement du contour, l'autre dans un nouveau type d'appareil pour faciliter l'insertion de la coupe.

ZUSAMMENFASSUNG

Die Anwendung der neuen Vitalliumschale bei Hüftgelenksplastik

Die Verwendung der neuen Vitalliumschale für Hüftgelenksplastik, ist bereits über das experimentelle Stadium hinaus fortgeschritten und ist das Mittel der Wahl bei Hüften deren Beweglichkeit bedeutend eingeschränkt ist, und die jedoch keine knochige Ankylose aufweisen. Um zwei Schwächen der gewöhnlichen Vitalliumschale zu verbessern, werden zwei Modifikationen vom Autor beschrieben um die Einsetzung der Schale zu erleichtern, die eine eine Verbesserung des Umrisses, die zweite eine neue Art von Reibahle.

SUMARIO

Neuva cápsula de Vitallium para la artroplastía de la cadera

El uso de la cápsula de Vitallium en la artroplastía de la cadera ha pasado de la etapa experimental, siendo el tratamiento escogido para todas las caderas con movimiento marcadamente limitado, pero sin anquilosis del hueso. Para corregir dos

puntos débiles de la cápsula de Vitallium ordinaria, los autores describen e ilustran dos modificaciones, una en el contorno y la otra un nuevo tipo de anillo, para facilitar la inserción de la cápsula.

RIASSUNTO

Una nuova coppa di vitallio

L'uso della coppa di vitallio nell'artroplastica dell'anca ha progredito ora al di là dello stadio sperimentale, essendo il trattamento di scelta in tutti i casi con netta limitazione dei movimenti ma non anchilosi ossea.

Gli Aa. descrivono e illustrano due modificazioni per correggere due difetti nell'ordinaria coppa di vitallio, una consiste in un miglioramento del contorno, la seconda in un nuovo tipo di apparecchio per facilitare l'inserzione della coppa.

DUES EXEMPTION FOR THOSE ENGAGED IN ACTIVE MILITARY SERVICE

At the meeting of the United States Chapter of the International College of Surgeons held in Chicago on March 30, 1941, it was unanimously agreed by the Executive Council that Associate Members, Members and Fellows of the International College of Surgeons are exempt from payment of dues during the period of active military service.

Two Cases of Genital Malformations

ABSENCE OF CERVIX AND ATRESIA OF VAGINA; HEMATOMETRA AND HEMATOCOLPOS

ENRIQUE LOUP B., M.D., F.A.C.S., F.I.C.S.*

LA PAZ, BOLIVIA

EMBRYOLOGICALLY, as we know, the uterus and vagina develop from the union of the Müllerian ducts. The insertion of the ligamentum inguinale, the future round ligament, into the urogenital cord distinguishes two segments in the Müllerian ducts. One, situated above, running along the wolffian body and remaining ununited, will constitute the fallopian tubes. The other, situated below, running toward the middle line, will fuse with that of the opposite side to form a single medial canal, the uterovaginal canal, the lower part of which ends blindly in an eminence of the posterior wall of the urogenital sinus.

At the beginning of the fourth month of intrauterine life, when the fusion of the Müllerian ducts has been completed and the intervening septum has disappeared, important modifications also begin to make their appearance in the epithelium which lines the genital canal. This soon changes its structure from polyedric stratified to high prismatic in the upper part; lengthening out, this will cover the lumen of the fallopian tubes. In the lower part, the future vagina, the epithelial layer is of the pavement type.

By the end of the fourth month of intrauterine life, as the uterovaginal canal becomes longer and flatter in its vaginal portion, its opposite epithelial walls approach each other, fusing from below upward, with the resulting formation of the so-called epithelial lame of the vagina, which entirely occludes the space between the walls. The cells that constitute this epithelial lame begin to proliferate in an active manner, resulting in the increase of the canal on both sides, longitudinally as well as transversely.

This longitudinal growth gives rise to two important formations at the ends of the lame. In the upper part, just at the point where the epithelial layer varies in structure from low pavement to high cylindric,

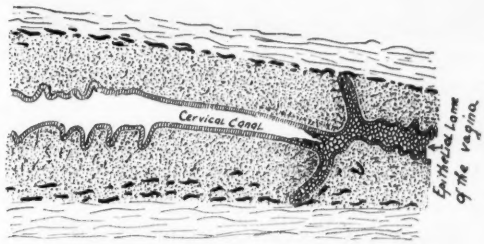

Fig. 1. Sagittal section of the cervix uteri in a human fetus, showing the dome-like growth of the epithelial lame of the vagina, outlining the constitution of the uterine cervix. (From Tourneux.)

it begins to emit a domelike growth which penetrates into the thickness of the genital cord, outlining the uterine cervix and the vaginal fornices (Fig. 1). The narrowed lower end of the vaginal canal is directed toward the vestibulum vaginae, to which it is united by an eminence of cells that will constitute the hymen, lined by a layer of the vestibular epithelium.

That is to say, the hymen "is no other thing than the anterior end of the vagina, lined out by the vulvar mucosa" (Budin), and the same embryologic element, the epithelial lame of the vagina, gives rise to two different formations, the uterine cervix at its upper end and the hymen at its lower end. The uterine cervix is formed first;

*Surgeon at the Hospital General.

the hymen at the end of the fifth month. Failure of fusion or arrested development of this embryologic formation accounts for the atresia of all or any part of the vagina, or for absence of the cervix, with or without involvement of the hymen.

Fig. 2. Case 1. Section of uterus with hematometra from congenital absence of the cervix and the lower portion of the vagina. Note the trees of life. This specimen appears smaller than it actually was, owing to contraction from formalin.

This assumption seems in full accord with the clinical findings which we are about to report. In both our cases of congenital anomalies we found absence of the cervix and fornices, associated with atresia of the lower portion of the vagina and, on the other hand, with normal development of the hymen. In other words, vaginal atresia and absence of the cervix may coexist with a normal development of the hymen and the external genitalia. From the clinical standpoint this means that a normal-appearing hymen does not obviate the necessity for keeping in mind a possible anomalous condition in the vagina and uterus.

CASE REPORTS

CASE 1.—F. C., an Indian girl, 15 years of age, entered the Hospital General on July 1, 1932, complaining of persistent pain in the left side of her abdomen. The day before admission she had been awakened with abdominal pain, becoming progressively more severe, finally almost unbearable.

Her past history revealed no attacks of pain nor abdominal cramps, but did disclose the important fact that she had never menstruated.

Upon physical examination we found a large, firm, tender tumor that reached the costal margin of the left side, crossing a little way over the midline. The mass undoubtedly being pelvic in origin, gynecologic examination was performed. The pubis was not covered with hair; however this is characteristic of the Indian race. The patient's labia majora and labia minora were well developed for her age. The hymen showed two tears, and the girl confessed she had been subject to an attempt at coitus.

Fig. 3. Case 1. Lateral view of the specimen showing enlarged adnexa.

The most striking finding was that above the hymen the exploring finger was stopped by a firm wall. *There was no vagina.*

Rectoabdominal examination revealed that the abdominal mass continued downward, creating a bulge in the upper third of the anterior wall of the rectum, then was suddenly interrupted at this level. This proved the absence of a vagina at least in its lower portion. It was somewhat difficult to pass a catheter into the bladder.

General conditions were satisfactory: temperature was 37.8 C.; pulse rate 90. The patient was a well-developed and well-nourished girl, showing only a bad implantation of the upper central incisors. There were no congenital anomalies in her family.

A preoperative diagnosis of hematometra was made at once.

First Operation.—On July 4 drainage was decided upon as a first stage in the treatment. Through a transverse incision, a sharp dissection 4½ cm. long was made between urethra and rectum, until the mass was reached. There were released 800 to 900 cc. of a thick, tarry, odorless fluid. Naturally the enormous mass decreased as the flow of liquid increased. Soon after, the tumor was confined solely to the pelvis.

The vaginal canal, very narrow, was lined with mucosa in its upper portion, where an outlet connected the small vagina with the uterine cavity. *There was no cervix and no fornices.* No irrigation was made. After a touch of mercurochrome, a cigarette drain was inserted.

The postoperative course was uneventful. Since conservative treatment was not advisable, because

more complex anomalies might be present, and since, moreover, the absence of a cervix meant an open pathway by which infection could enter the peritoneal cavity, a laparotomy was decided upon.

Second Operation.—This was performed July 11. Spinal anesthesia was given (0.12 centigrams novocain). When the peritoneum was opened, a small amount of an adherent chocolate-colored material was found. This was surrounded by fresh adhesions of the omentum, occupying the area mapped out as the site of the tumor mass. This finding seemed to demonstrate the fact that the fluid contained within the uterus found an outlet into the peritoneal cavity through the fimbriated end of the fallopian tube.

The uterus, about twice normal size, was displaced to the left. The ovaries were enlarged, especially the left one, which was a thick, sclerosed, dark-colored shell. The right ovary showed signs of the last ripeness of the graafian follicle; the tubes were enlarged and moderately dilated. The round ligaments, very atrophic, were reduced to thin folds of the broad ligament. The uterine arteries, especially the left, were very thin. Another branch of the hypogastric artery, accompanied by two veins, entered the uterus at a point just between the uterosacral ligaments and the normal site of the uterine artery.

Hysterectomy and left salpingo-oophorectomy were performed. Upon section of the vagina, we verified its narrowness, which scarcely admitted one finger. The specimen (Fig. 2) consisted of an enlarged uterus with dilated cavity and thickened walls. But the most important confirmation was the absence of the cervix, the vagina being a continuation of the uterus, with thinner walls. The section showed the trees of life characteristic of the cervical canal.

To correct the vaginal atresia, we lined with mucous membrane the canal previously made between urethra and rectum. This was done by cutting two flaps from the hymenal and vestibular mucosa, fastening them by a few interrupted sutures to the anterior and posterior walls. When the wound was healed, progressive dilatations were made.

Convalescence was uneventful. On July 28 the patient was discharged. By this time the vagina was completely lined with mucosa, and easily admitted two fingers, though in the superior portion, near the uterine outlet, it became somewhat narrower. That is to say, the reconstructed portion was more ample than the existing one. When the patient was seen one and one-half years later, her vagina easily admitted a speculum of medium size.

CASE 2.—M. U., an Indian girl 14 years old, was sent to my service in the Hospital General on June 8, 1939, with the presumptive diagnosis of "ovarian cyst." She complained of persistent pain in the lower abdomen. The pain was frequent and became much more severe when she was standing. Four months before admission, she had suffered a kick in the left side of the abdomen. Since that time she stated that she had noticed a tumor at that site, accompanied by pain. During the month previous to the admission these symptoms had become much more troublesome.

Her past history revealed that she *had never menstruated*, even though she was 14 years old. Her mother stated that her own menses were also very late, and that another daughter had menstruated at the age of 18 or 19 years.

Physical Examination.—The patient was a well-developed girl. The abdomen was soft and not distended. In the left lower quadrant there was a pyriform, smooth, firm tumor. It was freely movable; indeed could be moved from the left to the right iliac fossa without causing discomfort. Rectoabdominal examination revealed a diffuse, tender cystic mass bulging into the anterior wall of the rectum and spreading upward until it reached the tumor previously mentioned. At the abdominal area, just over the site occupied by the mass, percussion revealed dullness and the so-called "hydatic thrill." External genitalia

Fig. 4. Case 2. X-ray plate showing diverticulum dissected out by the hematic collection.

showed nothing abnormal. The pubis was naked, which was not rare, considering her race and her age. Labia majora and minora were well developed, the hymen was annular. But beyond the introitus, at the site of the vagina, there was a pit of 2½ cm., above which the exploring finger was arrested by a raw structure and a medial bridle.

Undoubtedly this was a case of vaginal atresia, and the referred mass could be nothing other than the retained products of menstruation. The hydatic thrill, so-called because considered pathognomonic of the hydatic cyst and attributable to the shock of the vesicles against each other, was found in this case just as in other cases of ovarian cysts containing large amounts of mucus. This phenomenon, I believe, can be explained as due to the waves produced by the percussion through the liquid mass.

The tumor, very firm, freely movable, and lying above the pelvic mass, was perhaps a pediculated ovarian cyst. Questioned as to the monthly attacks of pain so much emphasized by almost all authors, the patient's answer was negative.

First Operation.—On June 9, 1939, the patient was operated upon under general anesthesia. By sharp dissection between urethra and rectum, the mass was reached at about 3 cm. above the hymen. The tarry blood characteristic of the retained products of menstruation began to flow slowly. As soon as about 400 cc. of this fluid was drained off, the pelvic mass began to disappear. The pyriform body descended slowly into the pelvis; this was the uterus. The vaginal canal, very short, was directed upward, entering the uterine cavity by a transverse opening. *The cervix was absent.* The marginal circumference of the vaginal cylinder found at 3 cm. above the introitus was dissected in sufficient extension to be brought down toward the hymen, to which it was sutured by

interrupted stitches of fine catgut. A rubber tube was left in the vaginal canal.

The postoperative course was uneventful. As the absence of a cervix would have made it easy for infection to reach the peritoneal cavity through the uterus and the tubes, a laparotomy was decided upon.

Second Operation.—This was performed June 13, 1939, under spinal anesthesia. The abdomen was opened through a median incision. The uterus was found to be normal in size and form; the tubes were patent; the ovaries were rather small; the fallopian tubes were ligated. A normal-appearing appendix was removed. No further surgery seemed advisable, and the abdomen was closed in the usual manner.

The patient made a good convalescence. On the seventh postoperative day, there was still some discharge of tarry fluid through the vagina. This was strange, since we had seen that the uterus was not enlarged and its cavity certainly did not contain any more fluid. Previous to an injection of iodized oil, a roentgenogram was taken (Fig. 4). This showed a sort of diverticulum dissected out by the hematic collection, from which the leakage probably occurred.

The patient was discharged on July 13, 1939. At that time the vagina, which was entirely covered with mucosa, admitted one finger; its length was 3½ cm. Menstruation did not appear during hospitalization.

SUMMARY

Two cases are reported of Indian girls, fourteen and fifteen years old, with hematometra and partial hematocolpos resulting from congenital atresia of the vagina. In both cases the cervix was absent, while the hymen was normally developed; neither had ever menstruated. Clinically, the only symptoms were pains in the pelvis and lower abdomen and increasingly large cystic masses in the pelvis.

Operative treatment was vaginal drainage, followed by abdominal exploration. For partial restoration of the vagina, the canal was covered with vestibular and hymenal mucosa, fixed to the marginal circumference of the existing vagina. Results were satisfactory, especially in the first case, in which the restored vagina easily admitted a medium-size speculum.

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RÉSUMÉ

Malformation congenitale: absence du cou utérin et atrésie de la vagine; hématomètre et hématocolpos

Deux cas de jeunes filles indiennes de 14 et 15 ans avec hématomètre et hématocolpos partiel qui résultait en atrésie congenitale de la vagine sont rapportés. Dans les deux cas le cou était absent, tandis que l'hymène était développé regulièrement; ni l'une ne l'autre était menstruée. Cliniquement les seuls signes étaient douleur dans le bassin et dans les bas abdomen et des masses cystiques qui tendaient à croître dans le bassin. Le traitment opératif consista en drainage vaginal suivi par exploration abdominale. Pour réparer partialement la vagine, le canal fut couvert avec la mucose vestibulaire et hymenéale, fixée à la circonference marginale de la vagine existente. Les résultats furent satisfaisants, surtout dans le premier cas dans le quel la vagine restorée laissait entrer facilement un speculum de calibre moyen.

ZUSAMMENFASSUNG

Angeborene Missbildung: Fehlen der Cervix und Atresie der Vagina; Hematometra und Hematocolpos

Es werden zwei Fälle von Indianer Mädchen, im Alter von vierzehn und fünfzehn Jahren, mit Hematometra und partieller Hematocolpos durch angeborene Atresie der Vagina, beschrieben. In beiden Fällen fehlte die Cervix, während das Hymen normal entwickelt war; keine von beiden hatte je menstruiert. Die einzigen klinischen Symptome waren Schmerzen im Becken und Unterleib und an Grösse zunehmende Massen im Becken.

Der Operative Eingriff war vaginale Drainage mit folgender abdomineller Exploration. Zur teilweisen Wiederherstellung der Vagina, wurde der Kanal mit vestibularer und Hymenaler Mucosa überzogen, welche an die marginale Umrandung der vorhandenen Vagina befestigt wurde. Die Re-

sultate waren befriedigend, besonders in dem ersten Fall, in welchem die wiederhergestellte Vagina ein mittelgrosses Speculum leicht einliess.

SUMARIO

Deformación congénita: ausencia de la cervix y atresía vaginal; hematometra y hematocolpos

Se citan dos casos de muchachas de la India, de catorce y quince años de edad, con hematometra y hematocolpos parcial, resultantes de una atresía congénita de la vagina. En ambos casos la cervix faltaba, en tanto que el himen se hallaba normalmente desarrollado; ninguna de las dos muchachas había menstruado. Clínicamente los únicos síntomas eran dolores en la pelvis y en el bajo vientre y desarrollo de quistes.

El tratamiento operatorio consistió en canalización vaginal seguida de exploración abdominal. Para restaurar parcialmente la vagina, se cubrió el canal con mucosa del himen y del vestíbulo, fijada a la circunferencia marginal de la vagina existente. Se anotaron resultados satisfactorios especialmente en el primer caso, en el cual la vagina restaurada, facilmente admitía un espejo de tamaño mediano.

RIASSUNTO

Malformazione congenita: assenza del collo uterino e atresia della vagina; ematometrio ed ematocolpo

Sono riportati due casi di ragazze indiane di 14 e 15 anni, con ematometrio ed ematocolpo parziale risultante da atresia congenita della vagina. In ambedue i casi il collo era assente, mentre l'imene era sviluppato regolarmente; nessuna delle due era mestruata. Clinicamente gli unici segni erano dolore nella pelvi e nel basso addome e masse cistiche tendenti ad allargarsi nella pelvi. Il trattamento operativo consistette in drenaggio vaginale seguito da esplorazione addominale. Per riparare parzialmente la vagina, il canale fu coperto con mucosa vestibolare e imeneale, fissata alla circonferenza marginale della vagina esistente. I risultati furono soddisfacenti, specie nel primo caso in cui la vagina ristorata ammetteva facilmente uno speculo di medio calibro.

A History of Gastroenterology

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ONE of the lessons learned from the history of any branch of science, and medicine is no exception, is that each age steps up upon the shoulders of the age which has gone before it. Thus the value of any age lies not solely within itself, but as a sustaining link in the unbroken chain binding preceding ages to future ones.

All branches of science, and gastroenterology is no exception, are constructed like any edifice built by man. Instead of bricks laid one upon the other, in the end forming an awe-inspiring, completed structure, the temple of any science is built of facts. This temple, however, is never completed. Always there is more and new material to be added.

No attempt will be made to identify each and every brick in the gastroenterological structure. Here and there pieces which have excited our interest or aroused our curiosity will be mentioned.

PREHISTORIC TIMES

A start will be made with the prehistoric time when man first appeared as a living creature upon this earth. As a living, active aggregation of human tissue, his body required fuel to generate the heat necessary that this aggregation of cells might continue to live. His blood required a definite concentration of sugar, his muscles a definite amount of protein product, his liver to produce glycogen. His biggest problem was "how to live," his next "how to live comfortably."

At this stage of his existence he was a savage and possessed only of pure animal instincts. He killed the animals about him, and ate their meat raw, thereby furnishing protein and fats to his body. He found fruits and vegetables growing about him to furnish carbohydrate and sugar for his blood. Here is where he first came up against a gastrointestinal problem. He needed to learn selectivity, and this he proceeded to do by experience in the school of trial and error.

He learned that eating certain berries caused violent pains in his abdomen; that certain grasses and vegetables caused violent purging, while others caused a rather pleasant catharsis. Slowly he tabulated these experiences in his brain and in due time, by word of mouth, passed this information on to his brothers. They in turn exchanged their experiences with him, so that in time he became in a small way not only a dietary expert but a walking materia medica.

This process of assimilation went on through those great geological transformations which it took ages to accomplish, during which his environment was changed and he changed himself to adapt to the environment.

Gastroenterologically, he learned that the root of the ginseng plant, if steeped in water, made an excellent stomachic. Sarsaparilla and sassafras root similarly steeped whetted his appetite and made him feel good. Camomile, sage, dandelion and rhubarb he found to be most excellent mild laxatives and pleasant to take when his liver was out of sorts. When he was bilious he found that parsley seemed to help.

The waters of certain springs he learned had either laxative or tonic properties. Indeed some types of earth itself he found useful in diarrheas, and he searched dili-

gently for a supply for himself. This may have been either bismuth-containing earth or pure kaolin.

He found that decoctions of hemlock bark produced violent illness, even death, and he stored this knowledge away to use at some appropriate time. Such facts constituted the gastrointestinal knowledge of primitive man.

EARLY CIVILIZATIONS

After hundreds and thousands of unrecorded years, the great Egyptian, Persian and Arabian civilizations give some information as to the advances in knowledge made by man. At first whatever one man learned was available only in immediately adjacent territory, with which he came into direct contact. Later it was carried out into the world by travelers and roving traders, and converted into some more common language by someone capable of the task.

In spite of material evidence that these brilliant civilizations contributed notably to science, specific knowledge as to what and how is sadly deficient. Many existing papyri testify, though in a limited way, to the medical practice and custom of the times. Perhaps the most famous, at any rate the most publicized, is the Ebers' Papyrus. According to authorities, it was written sometime about 1550 B.C. and is of unknown authorship. It lay hidden for 3,500 years in a most ingenious place; during excavations in Thebes in 1858 it was found reposing between the thighs and under the scrotum of an Egyptian mummy. It was purchased by a professor named Ebers from Leipzig, and carries his name, although he devoted a great deal of time trying to dispose of it to the various museums of the world. It is of interest to us only because it is supposed to carry the earliest description of cancer of the stomach. Intestinal parasites are described, and their remedies. There is also a detailed description of liver complaints but no therapy is recommended.

In archeological ruins of ancient Egypt one sees delineated the daily life of the times, the gathering of fruits and grains, the kneading of dough, fish being caught by means of nets, but little pertaining to illness.

From the broken clay tablets of Assyria and Babylonia a fair amount of information

Photostat of page from Ebers' Papyrus.

is available, more particularly with reference to diseases of the mouth and esophagus. The term "esophagus" was used to designate the "mouth of the stomach;" and long before the time of the famous Greek physicians "cardia" was used for "stomach."

PRE-CHRISTIAN ERA

The sixth century B.C. can be taken as a secondary starting point, as from that time on there is some corroborative material as to what was known of medicine, and therefore gastroenterology.

Alexandria was the great seat of learning. Here was assembled a great library of manuscripts, numbering, it is said, over four hundred thousand. The largest portion of these were devoted to medicine. Here practiced one of the most learned physicians of

his time, Herophilus, thought by many an equal of Hippocrates and Galen. He was a great anatomist and surreptitiously dissected many a human body, thereby gaining much knowledge, so that he was able to correct many erroneous anatomic con-

AVRELII
CORN. CELSI
DE RE ME=
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OCTO.
ITEM
Q. SERENI *Liber de Medicina.*
Q. RHEMNII *Fannij Palæmonis de Ponderibus & Menſuris Liber.*
Omnia ex diuerſorum codicum diligen= tiſsima collatione caſtigata.
VIRTVTE DVCE, COMITE FORTVNA.
LVGDVNI APVD SEB. GRYPHIVM, 1542.

Title page from an early edition of Celsus' work.

ceptions and to invent many new anatomic terms. It was he who first described and named that small segment of the gastrointestinal tract about which we know so little even today—the duodenum. A contemporary of his, also practicing in Alexandria, made extensive studies of the pancreas, using live animals as his material.

Inevitably, because of either war or persecution, centers of learning shift from one place to another. So now there is a shifting from Alexandria to Greece, then to Rome. The Romans of that day were in a period of intense nationalism, and resented anything which came out of Egypt or Greece, particularly Greece. The result was that Roman medicine was of an exceedingly low level.

A quaint custom originated in these times —the "burning of the books." Wherever a group gained power in the political or theological arena, they made certain that all literature which might in any way contradict their own teachings should be burned. This usually took place in the form of a ceremony in a great public square amid general holiday festivity. Medicine was fortunate, for in proportion to other sciences it lost less; each group seemed to fear losing that of which all knew so little and which affected their own precious lives.

In the two centuries prior to the Christian Era there was little of interest. Two individuals were of passing interest, one surrounded with a halo of general approbation, the other obscured in a veil of shadow. The obscure one was the more interesting, however. His name was Serapion and he practiced in Alexandria. Apparently he was an extreme individualist. He scrapped everything, threw all dogma out of the window, claimed that he practiced medicine based entirely on his own observation, as he had found too many glaring errors in the works of the so-called authorities, and it was his belief that time would reveal many more. His gastroenterological contribution lay in the use of infusions of cascara bark to produce purging.

The one that the world has chosen to crown with laurels was Aesclepiades. Volumes have been written about him, and it is unnecessary to mention anything more than that he recommended and used opium in the treatment of abdominal pain, colic and diarrhea.

In the year 30 B.C. a Phoenician physician practicing in Rome gave the first description of fistula in ano and the methods he used in treating it, but no manuscript of his authorship has ever been found.

These years represent a time when the love of truth for its own sake disappears from the world and is replaced by expediency. An invisible justice, however, seems eventually to balance the scales. As the sterile period of untruth and deceit waned, we come to the first century of the era of Christ, and the Golden Age of Rome. To go into the brilliance of this period is a task in itself and really amiss here.

FIRST CENTURY A.D. THROUGH GALEN

The great medical mind of the time was Celsus. Critics have said that he was not as great as he has been made out to be, and they argue that it was only because those around him were so poor that he stands out. He represents a transition in medical progress. He compiled an immense and elaborate encyclopedia of all known medical knowledge. He was the first physician to advocate tonsillectomy. He wrote of gastric ulcer and was perhaps the first to write out and use in his practice a diet for ulcer patients.

Perhaps at no time in history has man been called upon so swiftly and so drastically to change his ways of thinking as in the first century. It was the time of Paul, the Apostle, and the influence upon people of Paul and his teachings was second only to that of the Master himself, Christ.

The greatest scientific and intellectual mind of this first century was Pliny, called Pliny the Elder in order to differentiate him from a son who was to follow in his footsteps. Here again a man is given great credit as a medical mind when actually he was mainly a compiler of medical material. He enjoyed an influential position and had access to an enormous amount of manuscript material, mostly of medical content, which he brought to the attention of the world. Many things which through oversight or neglect had been passed over, he brought again into use, illustrating the contention that many personalities serve mainly to hold together the links of knowledge which preceded them.

No. 213. Plinius. Naturalis Historia. Venedig. Joh. de Spira. 1469. Editio princeps.

Title page from early incunabula edition of Pliny.

Pliny's contribution to gastroenterology was the first description of congenital pyloric stenosis, its symptomatology, and some anatomical drawings of the condition, which could not be based on anything but actual postmortem "look see." He himself laid no claim to originality in this observation, being careful to mention that he found the description in his searching of manuscripts. His *Natural History* is an encyclopedia of all science, comprising thirty-seven volumes, three of which are devoted entirely to medicine.

Following Pliny was a simon-pure practicing physician named Dioscorides. His interest lay in botany and he traveled much, collecting plants, herbs and grasses. Later he wrote a text in materia medica which for fifteen hundred years was to serve as an authoritative source of knowledge. In it he describes such practical things of usage as rhubarb, squills, cascara, elm bark and camphor. To him must be given credit for the first description of the hypersalivation, bleeding gums, fetid breath and diarrhea of mercury overdosage. He advocated the use of tartar as an emetic to rid the stomach rapidly of poisonous substances. To the book collector he is a delight. Some of the incunabula editions of his works are of indescribable beauty, the printing, the binding, the format all exciting the most profound admiration.

For the next one hundred and fifty years, although medicine flourished, there were no notable contributions in the gastroenterological field. In general culture the Chinese were responsible for a step forward of exceptional significance. A eunuch attached to the Emperor's court discovered a process for making pure rag paper and presented the formula to his monarch.

Minor contributions made during these years have been lost in the shuffle of time. During the reign of the Emperor Trajan there practiced in Rome a Syrian physician named Archigenes, who had for a patient the Emperor himself. He made extensive studies of the simultaneousness of the heart beat and the pulse, and went even a bit further by describing the pulse beat as synchronous with systole and not diastole. He was essentially a diagnostician, treating disease mainly from the standpoint of diet. He did complete an accurate description of the lesions of leprosy. As the result of his zeal for wanting to know things, he devised the first vaginal speculum.

Contemporary with him in Rome were two outstanding surgeons. One, Rufus of Ephesus, described the liver and its lobes and wrote in much detail about sensory and motor nerves and their influence upon the ailments of human beings, particularly gastrointestinal ailments.

Then there appeared upon the scene a man who was so to influence medical thought for centuries that many believe that instead of contributing to the advance of medicine, he inadvertently served to retard it. This man was Galen. Primarily of a physiologic bent of mind, a research man, had his work gone but a step further, rather had his interpretation of what he saw been sounder, he would have antedated Harvey's discovery of the mechanics of the circulation of the blood by hundreds of years. He was a prolific writer on medical topics. In Volume 3 of the five-volume Greek edition of his work printed by the famed Aldine Press of Venice in 1525 there is a magnificent description of massive gastric hemorrhage and its differentiation from the hemoptysis of phthisis, together with suggestions for its treatment.

Practicing in the same city at the same time was a physician named Aretaeos, only slightly less a scholar than Galen. He gave us our first description of diabetes mellitis, its polyphagia, polydypsia and sweetness of urine, and outlined a method of dietetic therapy. He described in addition the premonitory aura of epileptic seizures; in the treatment of epilepsy he stressed, above all, the necessity for regularity in bowel elimination.

THIRD THROUGH NINTH CENTURIES

In the third century the Chinese surpassed their eastern brothers in almost every field of science. In those days they were the great travelers and merchants, crossing China's vast plains into other lands to sell their silks and other products at a profit. In so doing they came into contact with the large centers of commerce and carried home with them knowledge of

whatever they had seen that was new. Having invented the process of making rag paper, they now made a similar noteworthy contribution in the invention of black ink. Prior to this they had been using red ink, made from the cinnabar so plentiful throughout China.

The fourth century has as its most famous physician Oribasius. His special field was the spleen, and he wrote a text on the diagnosis and treatment of diseases of the spleen. In those times, in order to justify your standing as a great physician, it was the custom to write a great encyclopedia of medicine, the larger the volume the better. Oribasius was no exception. He wrote an *Opus Major* which consisted of seventy volumes of manuscript, thirteen of which were devoted to the spleen. Unfortunately, the greater part of this manuscript is lost. One wonders how it could be possible to write thirteen volumes on the spleen alone, as volumes were volumes in those days.

A lesser light of the time was one Posidonius, probably the first neuropsychiatrist. He attempted to localize certain body functions in certain brain areas and first described the symptoms of brain tumor, stating that the volatile, explosive type of vomiting associated with it was diagnostic. He mentioned "increased heat of the brain," which could be interpreted as meaning increased intracranial pressure.

Another physician, Sextus Placitus, must be given credit for the first written text in endocrinology. His manuscript, entitled *Liber de Medicina ex Animalibus,* describes the various parts of animal anatomy recommended for use in various diseases. Usually these were parts not ordinarily mentionable in casual drawing-room conversation. This manuscript survived and was printed in 1538 in Nuremberg by one of Gutenberg's apprentices.

The fifth century was one of gross inferiority as compared to the time which immediately preceded it and that which came after. Its chief intellectual light was a physician named Proclos, although in reality he was more astronomer and mathematician than doctor. At any rate, he wrote a *Home Book of Medical Practice*, a sort of "What to Do Until the Doctor Arrives." What is of interest in Proclos is that the great Avicenna, an illustrious name in medicine hundreds of years later, was not so honorable but that he could stoop to publish this little manuscript as his own work under the title *Light of Lights,* and without changing a word or rearranging a sentence. In later years lesser personalities followed the same procedure, always issuing the work under such beautiful and high-sounding titles as *The Flower of Divine Things;* and in the thirteenth century we find a great pillar of the church and of philosophy issuing the identical manuscript as his own under the grandiose title of *Liber de Causis et Processu Universitatis a Causa Prima.*

The sixth century was no better than the fifth. Most of the medical works of the period were a mere rehash of what had been said many times before. Once again the Chinese come into the picture. There is ample manuscript evidence that the Chinese were printing at this early date. The first book actually printed by them, by means of wooden blocks, consisted of six pages, each about a foot wide and two and a half feet in length, pasted together lengthwise and then rolled up. The expense of printing it had been guaranteed by a wealthy merchant. It was found in 1907 in a Buddhist cave in the province of Czechuan, about which we now read almost daily as the scene of Japanese war activity. It was bought by the British Museum and until recently was on display there. To the Chinese, then, credit must be given first for paper, then for black ink, finally for printing.

Another Chinese manuscript, written in the seventh century, with an entire chapter devoted to syphilis, was also lost from sight

and found in Japan as recently as 1909.

In the West the seventh century furnishes one item worthy of mention. There occurred the destruction of the great library at Alexandria, and it is impossible to estimate the blow to medical progress, as the greater part of the manuscripts there were medical.

Perhaps one should not pass over the sixth century without mentioning Alexander of Tralles, who wrote an extensive treatise on intestinal worms and introduced the use of rhubarb in the treatment of jaundice.

The eighth century was absolutely barren of any worthwhile medical contribution, and the ninth is noteworthy only for the writing of the first medical manuscript in Hebrew. Toward the end of the century there appeared an individual worthy of time and study. He was a Persian physician named Rhazes, who practiced in Bagdad, and was the greatest clinician of his time. He first made and used a hydrometer for measuring the specific gravity of urine. Along gastrointestinal lines he wrote a book entitled *How to Cure Stomach Ache in One Hour.*

TENTH THROUGH TWELFTH CENTURIES

The tenth century was characterized largely by Spain's entering the picture as a contributor to medical progress. This was due mainly to the wanderings of Arabians to her large cities, more particularly around Cordoba. One Albucasis stands out as a great physician, but he apparently was not interested in gastroenterology. A Persian pharmacist who was also a physician, carrying the almost unpronounceable name of Abu Mansur Muwaffak, described the uses of sodium bicarbonate and recommended its use in diseases of the stomach. That he was probably a capable physician can be estimated from the fact that he also recognized lead poisoning and its gastrointestinal features.

The time of Ibn Sina, known more familiarly to us as Avicenna, was the first half of the eleventh century. Although primarily a philosopher, he was also a great physician. His *Canons* have come down to us as his bibliographical monument. For six suceeding centuries these books served as the supreme authority in medicine. The entire work totals over one million words, which gives some idea of its scope. Many editions of this work were published during the incunabula period of printing, in 1473 in Milan, in 1476 in Padua, in 1483 in Venice. Small editions of some parts of the work were printed in later years.

Within its pages may be found a description of mediastinal abscess pressing upon the esophagus and causing dysphagia. The differential diagnosis between hemoptysis of phthisis and hematemesis of gastric inflammation is carefully elaborated. A whole chapter is devoted to emetics and purgatives. Fever with accompanying intestinal disturbance caused by drinking polluted water is described. This may have been typhoid. Nervous ailments are covered and there is an entire chapter devoted to love sickness and its effect upon the stomach. Although alcoholic distillation of liquor was a Chinese discovery, Avicenna gave it great impetus, as he distilled everything trying to find new compounds, new drugs.

There was one drawback to Avicenna and his work. It so completely dominated the times and he so overshadowed his confreres by his all-encompassing brilliance that no one bothered to think for himself, merely quoting whatever Avicenna had written upon the subject in question.

The last half of the eleventh century was the time of Omar Khayam, the Persian poet. These are declining years in that they marked the end of Hebrew and Moslem influence upon science, indirectly therefore upon medicine. There occurred an awakening of Christianity. A single high spot was the appearance of the first great herbal, the

Macer Floridus. This was to be followed by many others, enormous collections of botanical knowledge with particular reference to medical application.

The twelfth century was the age of translators, rather than originators. Everything possible was being translated from Arabic into Greek and from Greek into Latin. It was the time of the Crusades, treated in history as a lofty and noble effort. As a matter of fact, the Crusades were business promotions organized for profit, for the exploitation of the simpleminded and the credulous, blinded by faith and faith alone. The price paid by civilization for this lofty enterprise was the wanton sacking and pillaging of libraries and the destruction of collections of manuscripts.

Surgeons were a despised lot in the social order of the day for two reasons. One was the Jewish abhorrence of blood, the other was the Christian abhorrence of meddling with the human body, cutting into it whether living or dead. Skin diseases, which were considered as too disgusting for any respectable physician to handle, were referred to surgeons; this gives some idea of the contempt in which surgeons were held.

Maimonides, the great Jewish physician who lived during this time, described hemorrhoids and many types of astringent decoctions to be used in local applications for their relief.

SCHOOL OF SALERNO

Now we arrive at an epoch in medicine, the coming into prominence of the medical school at Salerno. Many individuals, each worthy of detailed description, will have to be skipped over here. Hugo of Lucca, Roland of Parma, Roger of Salerno are prominent names of this time. The first did much intestinal suturing, and his preparation and antiseptization of suture material are evidences of his enlightenment. As wounds of the abdomen by arrow or sword were all too frequent in these days of constant warring, his experience in this field was enormous; and his end results, glowingly recounted by his son assistant, sound much like the glowing accounts we hear today from certain sources.

A great manuscript came out about this time, the *De Proprietatibus Rerum* ("The Properties of Things"), by one Bartholomaeus, known as Bartholomew the Englishman. Later many incunabula editions were printed, each a monumental work of typography.

To digress for a moment, it is of interest to note the requirements of the School of Salerno for a medical degree. In the royal decree of Frederick II, it was ordered that to acquire the right to practice medicine, five years were to be spent in study and theory, then one year as an apprentice to an experienced physician. Those wishing to practice surgery must spend two years as assistant to a practicing surgeon.

During these early centuries medicine could not be considered as a science. It was more like an art. It still is an art today, except that it is based on the accumulation of much greater knowledge. We know that the medical men of that day were seriously deficient in knowledge. Many of them labored under the delusion that if you could name a thing you knew all about it. If you could give it several names, then you most certainly knew all about it.

Many doctors wrote treatises which on analysis were only recapitulations of what somebody else had said, only that they changed a word here and there in order to give a varnish of originality. That quaint custom has survived into present times.

Medical progress was slow, unlike today, when new additions to our knowledge can be looked for almost every year. If medicine has progressed rapidly in recent years, it is because it has had the help of allied sciences, biology, chemistry, bacteriology, and in addition the help of many new inventions and discoveries, the microscope,

spectroscope, X-ray, radium. The ancient practitioner had only what he gathered from his own observations and experience and from the experiences of others as set down in books.

Postmortem examination of the body was introduced in Bologna during this century. Most of the anatomy heretofore had been learned from the pig or from observations made when operating upon both living and dead in the theater of war. Much attention was focused upon the liver, and in practically all manuscripts written during these times, chapters were devoted to its anatomical structure and deviations.

There is a manuscript in the Bodleian Library at Oxford and another in the State Library at Florence written during these times; both give directions for the preparation of dilute and concentrated hydrochloric acid. No mention is made, however, of its medicinal use.

Thomas Aquinas' *De Corpore Humano* contains beautiful anatomical plates which are supposed to have inspired Leonardo da Vinci, possibly even to have been copied by him under the claim of original authorship.

FIFTEENTH AND SIXTEENTH CENTURIES

The fifteenth century was marked by a great renaissance in all learning. It represents the transition period from medieval to early modern. Significant events took place which singly and collectively influenced all scientific learning, therefore medicine.

The most significant of these was the invention of printing, although we must keep in mind that during this same time Columbus discovered America and Vasco da Gama found the Northwest Passage, proving that you could sail around the world from East to West and arrive home again without ever turning back. Copernicus established astronomy as a definite science.

Outstanding medical personalities were, in Italy, Johan Fernelius and Nicolas Leonicensus; in Germany, Heinrich von Nettescheim; in England, Thomas Linacre. Fernelius described acute appendicitis with rupture of the appendix. Leonicensus and von Nettescheim's contributions were in the field of liver disease. Linacre's contributions would require pages of description.

This was the day of the great printers and presses. In addition to Gutenberg, there was Caxton in England, the Giunta and Aldus press in Venice, Froben in Basle, Plautin in Antwerp, Elzevir in Leyden, monumental names to the collector of the books from this period. The specimens of typography which these men produced would excite the admiration and awe of any modern. Medical manuscripts comprised the bulk of available material, and there was feverish competition among these printers to get into public hands examples of their handicraft. In order to embellish their works and justify their pride in them, the binding of a book became a labor of love and art. Some of these bindings were embellished with precious stones, diamonds, rubies, even emeralds, and often in profusion. The tooling of beautiful leathers reached a perfection never surpassed. Embroidered covers, bindings of lace, bindings interworked with horn and shell, chain bindings, are impossible to describe in their variety and beauty.

To return to gastroenterological fields, one Mathius Frelrich, a priest in a small village in Germany, described the association of cirrhosis of the liver and chronic alcoholism, making it the subject of sermons to his parishioners in whom he tried to implant a fear of imbibing too freely by describing eloquently all the details of death from this illness.

Next came Paracelsus. The man's versatility can be best estimated from his work. To him is given credit for the discovery of hydrochloric acid in the stomach. He first prepared sulphuric acid and was the first

to use antimony extensively; although used for centuries in the treatment of skin diseases, he first popularized its use. He was far from being a refined doctor of medicine. He was a migrant, a vagabond, in plainer language, a bum. He hitchhiked his way all over Europe, drunk most of the time. Many a brawl did he engage in, in the taverns and resorts he frequented, and he learned much about syphilis first hand, as his chosen companions were more often than not barbers, bath attendants, gypsies and prostitutes.

In spite of his personal life, he contributed in a minor way to our field. He extracted laudanum from opium and praised its virtues in cases of colic. He used both potassium and sodium sulphate as a purge, and both arsenic and copper in anemias and tuberculosis. His was a contradictory character; he blundered much; but sandwiched in between his many mistakes were some great ideas.

Essentially this period belongs to the anatomists—Vesalius, Servetus, Eustachius, Sylvius, Fallopius and Fabricius, each name bringing to mind some familiar anatomical point. Eustachius, in addition to describing the tube to the ear which bears his name, first described the adrenal glands, though not any conditions associated with change in either their structure or function. Ambrose Paré, the great French surgeon of the day, had in his early days been nothing more than a wandering herniotomist who did not know how to repair a hernia without castrating the patient. Cesalpinus and Fracastorius are prominent names of the time, the latter the great syphilographer, famous for his hexameter poem describing syphilis, *De Morbo Gallico*.

SEVENTEENTH CENTURY

The seventeenth century furnished a milestone in the progress of medicine—William Harvey's discovery of the circulation of the blood, published under the title *De Motu Cordis* in 1628. Although this contribution was not gastroenterological, indirectly it influenced every prevailing medical idea, causing at first a tremendous amount of controversy.

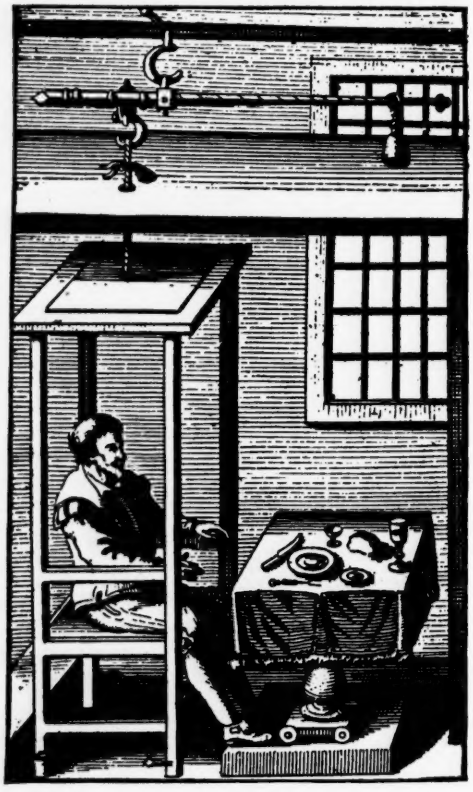
Following Harvey's discovery, there came a veritable flood of gastrointestinal contributions. These were made by men who did not enjoy great reputations as physicians, but who were patient, plodding workers carefully recording their observations. Some of these contributions follow:

George Wirsung (1642)	Discovered the pancreatic duct.
Jean Pecquet (1651)	Discovered the thoracic duct.
Thomas Bartholinus (1652)	Discovered the intestinal lymphatics.
Francis Glisson (1654)	Described the liver capsule.
Johann Peyer (1677)	Described the lymphoid follicles of the small gut.
Johann Brunner (1687)	Described the glands of the duodenum.

In 1680 came the invention of the microscope. From then on medicine advanced in rapid strides. Malpighi, the great histologist, added much to our knowledge of the physiology of the liver and spleen. Kircher conducted experiments upon the nature of putrefaction, showing how maggots and other living creatures develop in decaying matter. He also found that the blood of patients with plague was filled with a countless brood of "worms" not perceptible to the naked eye, but observable through the microscope. A pity that he did not advance

the one step further and identify these "worms" as bacteria. Malpighi's friend Baglivi, a sage and philosopher, worked along similar lines, but also fell short of the goal.

René Descartes, known best as a philoso-



Sanctorius on the Steelyard. (From his Ars de statica medicina, Leyden, 1711.)

pher, was the first to describe the peristaltic action of the musculature of the stomach. He spoke of it as a grinding and crushing process, entirely mechanical in its action.

An ingenious fellow was one named Sanctorius. In his *Dissertations* he speaks of using a clinical thermometer, a pulsilogium, or pulse clock, for counting the pulse and an abdominal and chest trocar or cannula for the removal of fluid. As a pioneer in the field of metabolism, he described an ingenious contraption for measuring what he called "insensible perspiration." Patients were weighed before and after eating, as well as while asleep and while engaged in various activities of daily living.

Van Helmont next appeared on the horizon. He analyzed bile, and his contributions to medicine and chemistry are of the greatest importance. The discovery of gastric juice is attributed to him, specifically its fermentative action; his observation was that it contained varying ferments, each with a definite function in regard to certain types of food. He was a great dietitian and recommended diets for the prevention of diseases as well as for their cure. He was one of the earliest to devote some study to occupational diseases, especially among metal workers. He first reported poisoning by coal gas. He also first introduced the idea of determining the specific gravity of urine.

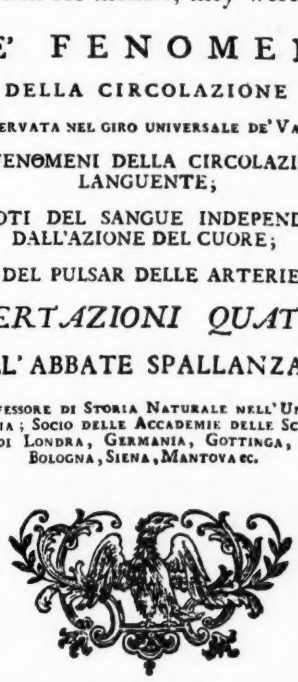
Regnier de Graaf was a versatile Hollander. His efforts were in two fields, in each of which he did most valuable and memorable work. He was one of the first experimental physiologists, and credit for much of what he did has accrued to men who later adopted his methods and succeeded in publicizing them to their own advantage. All too often in the history of medicine this gross injustice has happened. Generous praise and fame have come too many times to those who have made the last steps in a discovery and have reaped the result of all the discouraging effort which has gone before. The world has been too miserly in its generosity toward those who have made the initial and least profitable steps. De Graaf studied the pancreas and the digestive action of its juice, using dogs with pancreatic fistula, as Claude Bernard, Pasteur and Pavlov were to do later. One of his assistants named Bonn established the

fact that the pancreatic juice was alkaline in reaction. De Graaf studied bile, using actual biliary fistulas, obtaining his specimens under different environmental and dietetic conditions. Credit must also be given him for the first complete histologic description of the structure of the testis and the ovary and for the original description of the ovarian follicles which bear his name.

Peyer, who described the lymphoid follicles of the intestine, Peyer's patches, came next. He believed that these glands secreted a digestive juice. Brunner, who followed him, believed likewise of the glands of the duodenum. Glisson, a Frenchman, a combination of anatomist, physiologist and pathologist, contributed a description of the anatomy of the liver, its capsule and its blood supply, particularly the anatomy of the portal vein, thereby establishing the correct foundation for further studies on this organ.

In England Thomas Sydenbaum was the great clinician and internist of the day. An out and out individualist, possessed of tremendous energy, he cared not an iota for the opinions of his medical brethren. He maintained that the capacity of the human mind was limited; therefore there was no reason why the cause of everything that happened must be learned. He felt a very great sense of responsibility to his patients, maintaining that he was answerable to God for their care. As he himself suffered periodic attacks of renal colic, plus painful episodes of gout, his solicitude for those in distress can be understood. He contributed a rather comprehensive description of the various types of dysentery which he had encountered. A keen observer, in his description of malarial fever he calls attention to the associated enlargement of the spleen.

The seemingly insignificant often serves to shape trends of great import. Medicine at this time had bogged down and was in a rut. Materia medica was to give it the needed jolt, and at the same time to sweep aside a great deal of the superstition and quackery which had crept in. The specific agency to accomplish this was quinine. When people actually saw an unremitting malaria stopped by quinine in a few days, where formerly they had taken every conceivable abomination for months, they were incred-



DE' FENOMENI

DELLA CIRCOLAZIONE

OSSERVATA NEL GIRO UNIVERSALE DE' VASI;

DE' FENOMENI DELLA CIRCOLAZIONE LANGUENTE;

DE' MOTI DEL SANGUE INDEPENDENTI DALL'AZIONE DEL CUORE;

E DEL PULSAR DELLE ARTERIE.

DISSERTAZIONI QUATTRO

DELL' ABBATE SPALLANZANI

REGIO PROFESSORE DI STORIA NATURALE NELL' UNIVERSITA' DI PAVIA; SOCIO DELLE ACCADEMIE DELLE SCIENZE DI LONDRA, GERMANIA, GOTTINGA, BOLOGNA, SIENA, MANTOVA EC.

IN MODENA

PRESSO LA SOCIETA' TIPOGRAFICA.

MDCCLXXIII.

CON LICENZA DE' SUPERIORI.

Title page from Spallanzani's work.

ulous, yet there was the proof before their very eyes. Then came the use of ipecac in the treatment of dysentery. At first ipecac was a secret remedy and very costly; the French government at one time paid the equivalent of $25,000 for the formula.

EIGHTEENTH CENTURY

In the early part of the eighteenth century Holland came into the foreground.

Herman Boerhave of Leyden and his pupil, Albrecht von Haller, were responsible. The first wrote a description of rupture of the esophagus as the result of pressure by an aortic aneurysm. He described an increase in the size and number of gastric rugae occurring in certain digestive disturbances. This observation was based upon postmortem examination. Von Haller had an imaginative mind and was considered the master physiologist of his day. It has been said that many of the modern discoveries in gastroenterology can be found in his writings of two hundred years ago. He was one of the first of the "library surgeons." He described marvelous operative methods, yet he never performed an operation in his entire life.

In Italy Spallanzani devoted almost his entire life to the study of gastric juice. He demonstrated that its digestive property was as active on food outside the body as within, and that gastric juice prevented putrefaction of food even after this change had started.

Other names of this period, with their contribution to gastroenterology, would be:

Vater	Described the entrance of the bile duct into the duodenum.
Lieberkuhn	Described the intestinal crypts bearing his name.
Meckel	Of diverticulum fame.
Wrisberg	Described the anatomy and function of the vagus nerve.

Toward the middle of the century came another Italian, Giovanni Baptista Morgagni. This gentleman waited until he was seventy-nine years of age before publishing a work based on over fifty years of observation, teaching and practice. He looked at medicine entirely from an anatomical point of view, and much of his knowledge was based upon detailed study of postmortem tissue. He first described acute yellow atrophy of the liver and the occurrence of gumma of the liver in syphilis. In 1779 he published his *De Causis Morborum* ("Cause of Diseases") which contains this description of gumma.

In England there was a contemporary of Morgagni's who had often journeyed to Padua to study with him, Matthew Baillie. A Scotchman with a tremendous practice, which had made him very wealthy, he was the last of the great physicians of the eighteenth century. Matthew Baillie's contributions to the subject of gastroenterology were:

1. A description of the anatomy and pathology of gastric ulcer.
2. A description of transposition of the abdominal viscera.
3. A description of the ulceration of Peyer's patches in typhoid fever.
4. An elaboration of the definition of cirrhosis of the liver.

NINETEENTH CENTURY

The nineteenth century was the era of cellular pathology, with Virchow as its greatest exponent. From the standpoint of histopathologic changes in individual cells or collections of cells, medicine now hit its stride. In addition to his descriptions of cellular change in ulcer, in intestinal ulceration and in gastritis, we are indebted to Virchow for a complete description of amyloid degeneration of the liver and also of trichinosis.

In England there was Richard Bright, whom we are all too apt to think of only in connection with the kidney ailment bearing his name. An able clinician, he did much work on the pancreas, upon pancreatic diabetes, pancreatic steatorrhea and atrophy of the liver, and was the first to give an accurate account of status lymphaticus, of echinococcus disease and of echinococcus invasion of the liver.

Thomas Addison, a contemporary who, like Bright, we think of immediately only in connection with the disease bearing his name, contributed chronologically the first

description of pernicious anemia. His *Constitutional and Local Effects of Disease of the Supra-Renal Capsules*, published in 1855, brought him fame.

Von Liebig, a German chemist, elaborated some theories as to metabolism in general and formulated more accurately the prevailing ideas as to fermentation and putrefaction. Then followed four minor contributions to general medicine. Inasmuch as those constitute the mortar in the building of the final edifice, holding the main bricks or major contributions together, they are mentioned:

Pettenkofer	Discovered the test for bile in urine which bears his name.
Fehling	Discovered a test for sugar in urine.
Heller	Discovered the nitric acid test for albumin in urine.
Gmelin	Discovered the nitric acid test for bile in urine.

America first appeared in the picture by way of Beaumont's classical contribution, his *Physiology of Digestion*, based upon studies of the gastric fistula of one Alexis St. Martin, a French Canadian trapper. Like Harvey's *De Motu Cordis*, it constitutes a landmark in medicine. The fact that it can only be mentioned here does not minimize in the least its importance.

Brodie, the bone surgeon, best known for his description of the abscess named after him, did considerable experimental work on the influence of the vagus nerve on gastric secretion.

Phillip Syng Physick of Philadelphia, teacher, diagnostician and one of the most remarkable characters in the history of American medicine, in 1836 described diverticula of the rectum and sigmoid, and was the first physician in America to pass a tube into the stomach in a case of poisoning, then by means of a syringe wash it out and put in an antidote.

In the latter half of the nineteenth century physiology played a most important part. Personalities were von Helmholtz, Ludwig and Claude Bernard. Bernard and his experimental researches upon gastrointestinal physiology furnished the foundation for what we today choose to call modern medicine. With no intention of min-

COURS DE MÉDECINE
DU COLLÈGE DE FRANCE.

LEÇONS
SUR
LES PROPRIÉTÉS PHYSIOLOGIQUES
ET
LES ALTÉRATIONS PATHOLOGIQUES
DES
LIQUIDES DE L'ORGANISME

PAR
M. Claude BERNARD,
MEMBRE DE L'INSTITUT DE FRANCE,
Professeur de médecine au Collége de France,
Professeur de physiologie générale à la Faculté des sciences, Membre des Sociétés de Biologie, Philomatique de Paris, correspondant de l'Académie de médecine de Turin, des sciences médicales et des sciences naturelles de Lyon, Constantinople, Edimbourg, Stockholm, Francfort-sur-le-Mein, Munich, de Suisse, de Vienne, de Florence, etc., etc.

Avec figures intercalées dans le texte.

TOME PREMIER.

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Title page from Bernard's work.

imizing the importance of his work, we must keep well in mind that much of what Bernard did was only a continuation of de Graaf's original work. Later a famed physiologist, whose fame and prestige are based upon a further elaboration of these same ideas, will be mentioned, yet credit should be given where credit is due, to de Graaf.

So much has been written about Claude Bernard that only a bit of his personal life will be mentioned here to provide an insight into the conditions under which he had to work. His wife was a shrew, exceedingly temperamental and given to wild bursts of temper. It was nothing for her to invade either his study or his laboratory, put on one of her tirades, pick up his notes or whatever he was working on, tear them to bits and throw them out of the window or into the fireplace. Even this was mild compared to what she was capable of. One could hardly call these conditions conducive to the successful working out of an obscure physiological problem. Yet somehow Bernard managed, and rather successfully if we judge by these contributions to gastrointestinal physiology:

1. He established the glycogenic function of the liver.
2. He established that puncture of the fourth ventricle of the brain in dogs produces temporary diabetes.
3. He established that gastric digestion is only a preparatory act.
4. He established that pancreatic juice has the following functions: (a) it splits fats into fatty acids and glycerin; (b) it splits proteins received from the stomach; (c) it converts starches into sugar.
5. He demonstrated the vasomotor mechanism of the stomach.

Before passing on to the twentieth century, two nonmedical views of Virchow, who died in 1902, are presented inasmuch as they are pertinent to present-day events. One was that it was absolutely impossible that any one man could ever be infallible in judgment and knowledge. His second was that the Prussians were not a Germanic race, but a barbaric, destructive Mongol remnant.

The work of Ivan Pavlov stands out as the greatest in this field. It is illustrative of the concept that succeeding generations forge ahead by stepping up on the shoulders of those who have preceded them. His work was a further extension of that done by de Graaf and Claude Bernard. Pavlov's life and work would require an entire volume, but as most of it is contemporary, we are all familiar with it.

CONCLUSIONS

The men in our own time who have caught the burning torch of scientific progress from other hands and have successfully kept it burning need not be mentioned here, as they are familiar to us all. They are the present day builders whose function it is to add to the structure, and though the structure may never be completed and the final edifice never be viewed by them or by us, they have not broken the strands in the chain but have served to keep it intact. Little more could be asked of them.

H. G. Wells in his *Outline of History*, which gives little credit to the influence of medicine on civilization, does however give us a creed which is vitally necessary if the progress we have outlined here is to be maintained:

"There is a need today for the self-discipline of each and every individual in the feeling of social obligation and for personal and international good manners in order that these may operate for the greatest good of the greatest number, that the many may not continue to suffer for the crimes, whims, inaptitudes and insanities of the few."

In closing, we realize that many omissions have occurred in our endeavor to outline the growth and progress of gastroenterology, but that this sketch should be all-inclusive was never intended.

The Use of the McBurney Incision in the Treatment of Carcinoma of the Right Colon

THOMAS B. NOBLE, JR., M.D., F.I.C.S.
INDIANAPOLIS, INDIANA

URGENT need may lead the way to improvement of method. Carcinoma of the cecum and ascending colon is commonly seen advanced to the point of dissolution of the intestinal wall posteriorly. The sloughing abscess and its effects on the condition of the patient present the surgeon with serious and multiple problems.

In order to limit attention to consideration of operative approach and method, let us dispose of a very important aspect of the problem by merely saying that transfusion and all reasonable methods of improving a patient's condition will not bring about an afebrile state in some of these cases after perforation, and that many of them are in all ways unfavorable risks at the time of operation. This statement hurdles the preoperative concern and stresses the fact that operative method must be controlled by the patient's physical state if we are to extend the benefits of surgery to advanced and perhaps incurable cases.

INCISION

It is obvious that any vertical central incision through the abdominal wall will offer such exposure that often there must be included in the operative field the mesentery of the small bowel, the omentum, the transverse colon and escaping loops of jejunum and ileum, as well as access to the general peritoneal cavity. The certainty of evil consequences from removing a perforated carcinoma of the colon through a central incision needs no emphasis, since the dragging of the infected, sloughing, foul mass toward the midline presents the almost certain hazard of spreading contamination.

Proximal colostomy has always seemed to us a cowardly move in surgery, even in metastasized cases, and our study of end results warrants continuation of this attitude. To offer reasonable surgical risk to these serious and advanced cases requires, then, the limitation of the operative field to a "silent zone"—one in which we do not expect to hear from peritonitis. It requires removal of the carcinoma and its mesenteric metastases, or the major portion of them. It requires a serviceable enteroenterostomy and a closure of the abdominal wall with maintenance of its integrity. These requirements necessitate an incision well over to the right to begin with.

The muscle-splitting, McBurney type of opening has been adopted by the author. The skin incision may be transverse, slanting, or vertical as suits anatomy and surgical choice. The opening through the muscle is chosen to offer ease of ileocolostomy at conclusion, and is therefore rather high over the healthy colon to be used in anastomosis. The liberation of the hepatic flexure is made much easier by the higher opening, and the terminal ileum and cecum are normally so free that they may be moved from the pelvis upward with no difficulty. If the growth is at the ileocecal junction, it may be delivered upward with slight effort after dissection, even though perforated; this again will keep contamination

Fig. 1. McBurney approach down to internal oblique. Bulge shows location of tumor mass at lower end of incision.

Fig. 2. Ligation of terminal ileum about four inches from cecum.

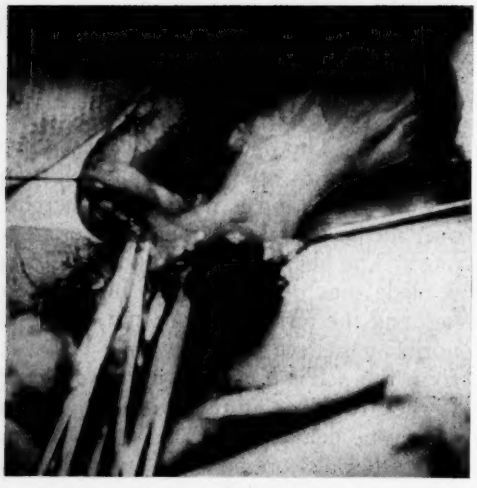

Fig. 3. Inversion of proximal ileum.

out of the pelvis, which is the danger area if peritonitis is to be avoided. So the rather high location of the McBurney approach is important.

DISSECTION

On opening the peritoneum, palpation will demonstrate the difficulties to be met and the extent of the opening. Free access to the parts should be secured in the beginning. As a rule—all such rules being subject to change or modification at the will of the surgeon—it is best to sever the terminal ileum first. The proximal stump is immediately inverted and returned into the abdomen. The peritoneum of the mesentery of the ileum and covering the ileocolic and right colic vessels is split, so that the vessels may be picked up and ligated before hemorrhage. With extensive dissemination of the growth, or marked abscess formation, there may be much edema here; care is therefore necessary. Usually the left index finger finds a line of cleavage under the colic vessels and anterior to the transversalis fascia, so that complete control of the circulation may be secured in advance of hemorrhage at all times. A large growth, attended with marked induration and fixation, offers difficulty, but orderly plan permits continuation of chosen procedure without interruption. After ligation of the blood supply of the cecum and ascending colon, further dissection may be done.

The extent of the growth and its consequences will determine how much is removed. Advanced degrees of carcinoma may warrant excision of a layer of the abdominal wall left adherent to the growth. Here may enter the question of ureteral involvement. As a rule the ureter is well to the left of these growths and need not be disturbed. The writer has followed the philosophy in the expression of a friend, "It is better to be alive with one, than not alive with two," and disregarded the ureter in dissecting widely around these advanced

growths. Nodular lymphatics and mesenteric fat should be removed as possible. The duodenum and the blood supply to the parts of the colon not excised must be protected, but may be rather freely uncovered in most instances. The amount of colon excised will be determined by the location and extent of the growth. Ordinarily, the ileum is to be anastomosed to the first portion of the transverse colon, so that the cecum, ascending colon and hepatic flexure are removed by choice for carcinoma of any part and of any degree.

After the severance and inversion of the ileum, the dissection and ligation of the blood supply through the area to be excised, the dissection of the involved area and its consequences such as abscess or metastasis, the healthy colon distal to the involved area is ligated, severed and inverted. In severing the ileum and the colon, the same method is used. Ligate with plain catgut no. 2, or any desirable material. Surround with loose gauze soaked in bichloride; dip the knife blade in carbolic solution and cut between ligature and clamp. Repeated dipping in carbolic solution keeps all dirty material well carbolized. In our experience this causes less spatter than cautery or any other method, and so is preferred. Silk is used to invert the stump and secure the blind ends of severed gut.

The raw edges of the mesentery of the ileum and transverse colon are now sutured to close an opening through which disaster might flow later in the nature of a loop of small bowel to be strangulated.

A side to side ileocolostomy is done in the usual manner. A point to be noted in all enteroenterostomies in all areas from gastroenterostomy to lower colon anastomoses may be made here. It is not wise to permit the peritoneal suture of any enterostomy to bear alone the strain of the hydrostatic forces involved. An extra and prolonged silk suture insures that all stress is borne by this union and not by the junction wound.

Fig. 4. In this case a deviation from usual was adopted because of extent of pericecal inflammation and induration. The transverse colon was severed before dissection of the growth. The distal end was inverted and dropped back. The method of severance with knife and carbolic is shown. Large buttons left when cutting between clamps as shown here are resected at time of inversion.

Fig. 5. Severance of attachment of hepatic flexure. End of ileum showing below.

Fig. 6. Ileum, upper right colon and area of growth showing as dissection advances. Right colic vessels caught and tied as met.

Fig. 7. Node found well up in mesentery of right colon. Growth delivered and kept to right away from most of area of exploration.

This can be varied as desired so long as the mechanical principle involved is understood and preserved.

DRAINAGE

All cases are drained. A rubber tube almost of the consistency of stethoscope tubing is used. It is the opinion of the writer that fistulas develop from abscess and local infection, and that these in turn develop from accumulated fluid culture media. No fistula has resulted from drainage in our experience (tuberculosis is not considered in these general remarks, as drains are dangerous in the presence of tuberculous peritonitis). The drain is brought out laterally, usually through a stab through the muscles. The inner end of the tube lies lateral to the anastomosis and under the junction of the mesenteries. Its value may last for only a few hours, but it is always allowed to remain from four to seven days because of the tendency of colon bacilli to nest around a foreign body and give rise to late abscess if the drain is removed earlier, and because its presence has never produced demonstrable harm.

Throughout all steps outlined above antisepsis is practiced. Bichloride solution is kept in a handy basin. Constant washing of the gloves and constant washing of the wound and tissues involved are done as the surgeon deems fit. This may destroy some apparent neatness in the operative field but is advisable. To practice antisepsis before operation, then abandon it during a dirty procedure for "asepsis" is not reasonable. One might as consistently clean out a sewer dressed in formal attire.

Finally, before closure of the abdominal wall, the entire intraperitoneal zone is cleaned with gauze wet with bichloride. As it is closed, each layer of the abdominal wall is cleansed with the same idea in view, and the sutures are wiped with gauze wet with bichloride as each layer is united. There has been no evident absorption of mercury and it seems that there could be little, if handled properly, and its beneficial effects are positive. Infection of the abdominal wound in perforated cases is rare, although drainage is profuse for a time in some that have had extensive abscess. Occasionally, extension of the carcinoma into the abdominal wall has been through the transversalis fascia, and actual cautery has been used to kill off the visible malignant tissue, and beyond. All of this area has been made practically extraperitoneal by suture of the

Fig. 8. Anastomosis of ileum and transverse colon after closure of mesenteries. Suspension stitch.

omentum to the margins of the operative zone.

Using the plan as outlined above, the writer has had no resulting case of general peritonitis, no resulting fistula or gut separation. The need for some relief other than proximal colostomy in the obstructed, advanced abscessed cases led to the above plan. If so practical in unfavorable cases, it seems that this operative plan should be even more so in cases not advanced or fixed. This is logical and has been the case. For more than fifteen years all cases of carcinoma of the first portions of the colon have without exception been removed through the McBurney approach as described here. In no case has the procedure been regretted, and in no case has it been necessary to change plan or method. Gauze sponges are not necessary except in the most advanced cases. A good aspirator will make them unnecessary. Operative shock and peritoneal abrasion through gauze packs or towels used to wall off other abdominal regions are thereby largely eliminated. Since dissection makes most of the work extra-abdominal, only light anesthetic is needed; so here again shock can be reduced.

After operation, indicated needs are met. Fluids administered intravenously, not orally, for twenty-four hours, or transfusion where the preoperative condition was bad, are given according to our knowledge of the individual's needs. In all McBurney's an early back rest will help return to normal vasomotor tone and metabolism. Embolism is avoided by early return to normal physiological state.

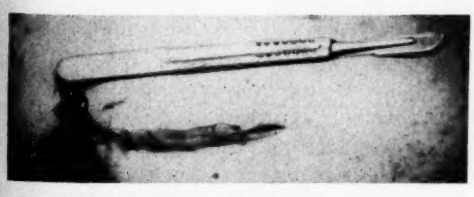

Fig. 9. Closed wound with drain.

Fig. 10. Bad slide of entire specimen. Incision made into carcinoma through area of necrosis and perforation posteriorly.

OPERATIVE RESULTS

Return at the site of ileocolostomy has not been seen. Continuance of growth in areas not removable has been seen, and X-ray has been used freely. No obstruction has recurred in any case. Secondary metastasis seems to decrease in activity; return to health and normal activity has been the rule even in those advanced abscessed cases. Normal exercise of appetite and normal functioning of the intestine give mental relief to those who have carried their growths a year or more before surgery. The improvement of mental and physical health has, of course, been beyond calculation. Extension of longevity is uncertain because cases, hopelessly incurable, have stayed well so long after surgery, giving rise to the observation that much of the disability and morbidity resulting from carcinoma of the right colon is due to absorption from necrotic areas plus secondary infection.

In the last ten cases of carcinoma of the right colon with loss of continuity of a portion of the colonic wall, there has been one death. The preoperative condition here was

very bad. The improvement from preparation brought the renal function to a total of seven per cent, and uremia was the cause of death. One can be criticized for extensive surgery on any or all of these cases, but a ten per cent loss in such a series is worth careful consideration.

One patient operated upon in 1934, having had a mass and febrile state for one year, with a perforation well walled off, is alive and well today. He works, his abdominal wall is sound, he eats as he pleases. There is no sign of return—giving rise to the thought that colon bacilli may work ahead of metastasis in these cases and serve as the real life-preserver. He has had no X-ray and no wound to dress.

Another patient, operated upon four years ago, febrile six months before operation, presented visible metastasis by direct extension into the transversalis. Much of this was removed and the remnants cauterized. Deep therapy X-ray has kept palpable local return within reason. This has been in the abdominal wall and has not affected intestinal function. This patient has been a normally active housewife these four years and has maintained her weight, strength and social activities. There has been no wound to dress.

A third case, operated upon in February, 1939, showed extensive local lymph node metastasis, as well as a small posterior perforation and abscess. He has a marked metastatic mass in his right upper quadrant—surely deep lymphatics—and is beginning to grow worse. He has had no X-ray through his own decision. This was a grade IV carcinoma, and surgery served to eliminate the abscess and a possible fistula. We cannot control all aspects of a desirable follow-up in therapy in all cases.

In conclusion, it seems that the method chosen succeeds in keeping the dirty surgical field extraperitoneal in a practical sense. It offers a chance to escape permanent colostomy. It offers a chance to eliminate the perforating abscess, which causes disability through the effects of long-continuing febrile states, and which will eventually give rise to fistulas. This method has been attended with low mortality, low morbidity and increased years of apparent health and activity in late and complicated stages of this serious disease. It is used to advantage in early stages.

In the light of the multiple-stage operations, and the time, difficulties, and mortality and morbidity tables these produce, a single-stage, workable method, proven by use and time, has its place in all carcinoma of the right colon.

SUMMARY

There has been need for a means of effective removal of pathological tissue and anastomosis of ends of the intestine in cases of advanced, perforating carcinoma of the right colon. Extension of the disease makes some operative methods inadvisable. The McBurney approach offers a reasonable method in a single stage and has been adopted as routine in all cases of all degrees of carcinoma of the right colon for many years by the writer. Details of the plan are given.

In the more advanced types this procedure has been attended with favorable mortality and morbidity. In less advanced types it has offered much in improved morbidity, as compared with multiple-stage operative method. Results of several cases are outlined.

RÉSUMÉ

L'incision de McBurney dans le traitement du carcinome du colon droit

Il était necessaire d'avoir un moyen pour une effective asportation de tissues pathologiques et de anastomoses des parties terminales de l'intestin en cas de advancé carcinome perforant du colon droit; l'extension de la maladie rend quelque méthode opérative pas avisable. La thécnique de Mc-

Burney offre une méthode raisonnable en un seule étage et elle a été adoptée regulierement par l'auteur dans tous les cas de carcinoma de chaque degré, pendant plusieurs années. Détails pour son attuation sont donnés.

Dans les cas les plus avancés ce procédé a été employé avec des résultats favorables dans la mortalité et la morbidité. Dans les cas les moins avancés il a donné beaucoup en améliorant la morbidité, comparé avec la méthode opérative avec successifs étages. Les résultats dans plusieurs cas sont ici décrits.

ZUSAMMENFASSUNG

Der McBurney'sche Schnitt bei der Behandlung von Carcinom des rechten Colon

Es war ein Mittel, für den Weg einer Entfernung von pathologischen Gewebe und Anastomose der Eingeweideenden nötig, in Fällen von fortgeschrittenen, perforierenden Carcinom des Colon. Die Ausbreitung der Krankheit macht gewisse operative Methoden nicht ratsam.

Der McBurney'sche Weg stellt eine vernünftige Methode in einem Wege dar, und wurde vom Autor als Routine bei allen Fällen in jedem Stadium von Carcinom des rechten Colon, während vieler Jahre verwendet. Der Plan wird ins Detail beschrieben.

In den mehr fortgeschrittenen Fällen wurde dieses Verfahren mit günstigem Resultat in Bezug auf Mortalität und Krankheit angewendet. In den weniger fortgeschrittenen Fällen war es günstig in Bezug auf Krankheitsverlauf, verglichen mit in mehreren Etappen ausgeführten Operations-methoden. Resultate bei verschiedenen Fällen werden beschrieben.

SUMARIO

La incisión de McBurney en el tratamiento del carcinoma del cólon derecho

Constituyó una necesidad el tener un medio efectivo para poder eliminar los tejicos patalógicos y anastomosar la extremidad del intestino in los casos avanzados. La extensión de la enfermedad hace algunos métodos inaplicables. El McBurney parece ser un método razonable y simple, el autor lo ha adoptado como método rutinario en el tratamiento de todos los casos y grados del carcinoma del cólon derecho. El método es descrito en detalle.

En los casos muy avanzados la aplicación de este método ha sido seguido de un mejoramiento en la mortalidad y morbilidad. En los casos menos avanzados ha mejorado mucho la morbilidad, cuando se compara con el resultado de otros métodos operatorios. Son descritos los resultados de muchos casos.

RIASSUNTO

L'incisione di McBurney nel trattamento del carcinoma del colon destro

Era necessario di avere un mezzo per un'effettiva asportazione di tessuti patologici e di anastomosi delle parti terminali dell'intestino in casi di avanzato carcinoma perforante del colon destro. L'estensione della malattia rende alcuni metodi operativi sconsigliabili. La tecnica di McBurney offre un metodo ragionevole in un solo stadio ed è stata adottata regolarmente dall'autore in tutti i casi di carcinoma di ogni grado, per molti anni. Vengono dati dettagli per l'attuazione.

Nei casi piu avanzati questo procedimento è stato effettuato con risultati favorevoli nella mortalità e morbidità. Nei casi meno avanzati ha offerto molto nel migliorare la morbidità, confrontato con il metodo operativo con successivi stadi. Risultati di parecchi casi vengono tratteggiati.

Hereditary Cataracta Caerulea

A REPORT OF THREE CASES TREATED SURGICALLY

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CATARACTA caerulea, or blue cataract, is not extremely rare, but three cases in one family may be considered quite unusual.

CASE REPORTS

CASE 1.—Mrs. F. P., aged fifty, a housewife, had always had subnormal vision, but for the past three years her general health had been below par and her vision had failed rapidly. When she came to us her vision was right 6/200, left 20/200+1, which was not improved by correction. Her general condition was not good, and the internist diagnosed a secondary anemia. Preliminary to surgery, treatment improved her condition materially. A Zeiss-Comberg slit-lamp x2 examination of her eyes revealed lens opacities as shown in Figure 1. The blue was slightly lighter than the appearance of a membranous cataract when fluoresced by the Hildreth lamp. There was also a posterior cortical opacity in the right eye. On July 2, 1940, the right cataract was removed in the capsule by the Barraquer method. By July 18 she obtained 20/20 vision corrected. She returned September 25, 1940, and on September 27 the left cataract was removed in the same way. She obtained 20/20 vision corrected in this eye also.

CASE 2.—J. P., the twenty-year-old son of this woman, came to us with 20/200 vision in his right eye and 10/200 vision in the left eye. This could be corrected to right 20/40 and left 20/30. He demonstrated the same immature blue cataract, although it was not so pronounced as in his mother's case and had much less of the coronary cataract appearance. We performed a discission of each anterior capsule and both cataracts were removed by the vacuum method, the right on July 2, and the left on July 12, 1940. On July 22 his corrected vision was right 15/20-4 and left 15/40-1. Two weeks later he had 20/20 vision OU.

CASE 3.—T. P., the eighteen-year-old daughter, was able to count fingers at three feet with her right eye and at four feet with the left when she came under our care. This could be corrected to right 20/40 and left 20/30. She demonstrated the same condition as her brother, except that the cataracts were less mature. We used the same surgical procedure, operating the right eye July 13 and the left September 28, 1940. Her corrected vision is now 20/20 OU.

Both the mother and the children were alert, attractive people, normal in every way except for their eyes.

COLORING OF CATARACT

Duke-Elder's *Textbook of Ophthalmology* (3:3185) explains the unusual coloring of the cataract in the following manner: "The bright blue color, which suggested the name *Cataracta caerulea* or *blue-dot cataract*, is a physical phenomenon depending on the dispersion of light. In any opalescent medium minute particles disperse the light irregularly inversely as the fourth power of the wave-length, so that the major part of the dispersed light is made up of the short blue and violet waves. The cataract is blue, therefore, for the same reason as, owing to dispersion by the atmosphere, the sky is blue."

OPERATIVE PROCEDURE

The operative procedure utilized in Cases 2 and 3 was as follows: In the boy, a discission was made of the anterior capsule (see Fig. 2). Two days after, a 5-mm. keratome incision was made through the cornea into the anterior chamber and the softened lens debris was aspirated by means of mouth suction (Fig.3). The Hildreth lamp was used throughout the procedure, as it fluoresces the lens and capsule, making it possible to identify them. The posterior capsule, being demonstrated as clear, was not needled. This procedure is a minor operation and can be done later if the capsule becomes opaque. Frequently in these perinuclear types the capsule is not involved.

The girl of eighteen demonstrated a soft lens upon slit-lamp examination, and the first, or needling, step was omitted. When

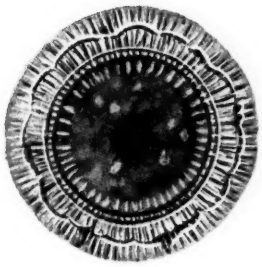

Fig. 1. Cataracta caerulea (Case No. 1) as seen by slit lamp. The color is the chief difference from other congenital cataracts. Surgical treatment is the same.

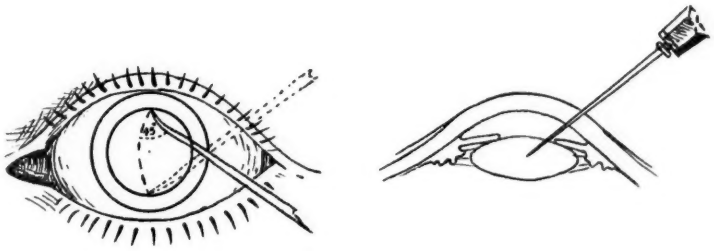

Fig. 2. A curved needle slitting capsule with pupil fully dilated. At right, schematic of position of needle in lens.

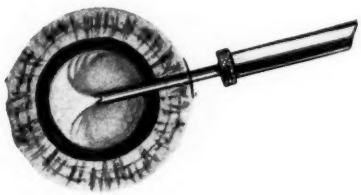

Fig. 3. Suction extraction of soft lens through aspirating needle introduced into anterior chamber through 5 mm. keratome incision. A similar technic is employed in all soft and juvenile congenital cataracts, although the technic has been further improved by employing a new double barreled needle for continuous irrigation and suction to evacuate the soft lens.

the keratome was pushed into the anterior chamber, the point was moved up and down to slit the anterior capsule, as with the discission technic. The soft lens substance was immediately removed by mouth suction (see Fig. 3). Here also the posterior capsule was clear and no needling was necessary. In both patients full restoration of vision was obtained within a few days.

This method compares very favorably with the long, drawn-out waiting for absorption necessary when needlings alone are performed. It is quite usual for one to a dozen needlings to be performed on congenital or juvenile cataract, and then absorption does not always occur or the resulting inflammation leaves adhesions (synechiae) that are highly unsatisfactory and not infrequently interfere with good function or appearance of the eye.

We have utilized this aspirating or suction removal of cataract for the past eighteen years in over 200 cases handled by ourselves and associates. We have performed it on a six-year-old boy under local anesthesia with complete restoration of vision. We also used it on a case of toxic cataract (dinitrophenol) in a woman of forty-eight. Altogether we have used it in 14 cases of cataract caused by dinitrophenol with 100 per cent success. The lens softens in these toxic cases and aspirates perfectly. The posterior capsule in all these cases required discission. The retinas fortunately were not affected and, therefore, full restoration of vision was obtained.

Only one unfavorable case being encountered, the results were much more satisfactory than the average. It is therefore only fair to consider this technic as nearly ideal as anything possible in the way of cataract surgery. Unfortunately, it is applicable only where the lens is soft.

If the retina is normal, full restoration of vision is obtained. There is no waiting for ripening to utilize surgery. Another important advantage is that no iridectomy is necessary and the iris is intact, giving round pupils and leaving no cosmetic disfiguration. Another advantage, which will become of increasing importance as the use of contact lenses becomes more general, is that no scar or elevation results at the limbus, so that no elevated contour will interfere with the adaptation of the usual curve of the contact lens. One very attractive young woman of twenty-eight, having recovered her sight by the removal of both cataracts through this suction method, wears contact lenses with the utmost enthusiasm.

SUMMARY

Removal of soft cataracts by suction is an ideal method, as full restoration of vision is quickly obtained, it renders the usual needling operation obsolete and there is no disfigurement. Contact lenses can be comfortably worn after cataract surgery.

Three cases of hereditary cataracta caerulea occurring in one family are reported. The condition was treated surgically in all three cases, with gratifying results.

RÉSUMÉ

Cateracta caerulea héréditaire

L'asportation de cateractes tendres avec la succion est une méthode ideale, parce que complete restoration de la vision est obtenue très rapidement, elle rends l'opération ordinaire avec l'aiguille en désuétude et il n'y a pas d'enlaidissement. Des lentilles speciales peuvent être portées confortablement après chirurgie sur la cateracte.

Trois cas de cateracta caerulea héréditaire se présentants dans une famille sont réportés. La maladie fut traitée chirurgicalement dans tous les trois cas avec des bons résultats.

ZUSAMMENFASSUNC

Erbliche cataracta caerulea

Die Entfernung von weichen Katarakten durch die Saugungsmethode ist eine ideale,

da sehr bald die volle Sehkraft wieder hergestellt ist, und keine Entstellung auftritt, die gewöhnliche Nadeloperation erscheint dadurch veraltert. Kataraktlinsen können nach der Kataraktoperation bequem getragen werden.

Es werden drei Fälle von erblichen Cataracta caerulea beschrieben, welche in einer Familie auftraten. In allen drei Fällen wurde das Leiden mit zufriedenstellenden Erfolge auf dem chirurgischen Wege behandelt.

SUMARIO

Catarata caerulea hereditaria

Constituye un método ideal el remover una catarata blanda por succión, se obtiene de este modo la pronta restauración de la vista, no deja deformación y el cristalino puede desempeñar sus funciones.

Son reportados tres casos de catarata caerulea hereditaria que se presentaron en una familia. Esta condición fue tratada quirurgicamente en los tres casos con resultado satisfactorios.

RIASSUNTO

Cateratta cerulea ereditaria

La rimozione di sottili cateratte mediante suzione è un metodo ideale, poichè si ottiene un rapido e pieno ristoro della visione rende il metodo usuale con l'ago fuori uso e non resta sfiguramento. Lenti speciali possono essere portate comodamente dopo chirurgia della cateratta.

Tre casi di cateratta cerulea ereditaria nella stessa famiglia vengono riportati. Il disturbo fu curato chirurgicamente in tutti e tre i casi con rallegranti risultati.

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Present Aspects of the Appendicitis Problem

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TEN years ago the historical phases of the appendicitis problem were reviewed by the author.[5] During the past decade numerous investigations and many important contributions have been made toward the better handling of this problem. Greater agreement now exists among surgeons as to the proper management of neglected cases of acute appendicitis. It was therefore thought that a second presentation, a decade following the original summary, might prove of interest.

All surgeons are in agreement that deaths resulting from appendicitis occur in neglected cases, in which perforation, with varying degrees of peritonitis, is allowed to develop. Efforts in the future must be directed toward the elimination of the complications of late perforating appendixes. This presentation will, therefore, be concerned chiefly with the treatment and management of these neglected cases. No discussion will be presented on the diagnosis of this pathologic entity. It will also be assumed that all diagnosed cases of acute appendicitis are treated by a qualified surgeon, whether or not operation is performed.

Among ourselves we should honestly admit that a certain amount of the blame for the late recognition of appendicitis, and for its consequent formidable mortality rate, which has not been appreciably reduced in the past thirty years, can be laid directly upon the doorstep of the medical profession. Upon first thought, this seems to be an unwarranted accusation. However, all of us have seen and cared for many neglected cases of perforated appendicitis that had been under medical care from the onset of the disease. If an early correct diagnosis had been made and the proper care promptly instituted by the attending physician, the tragic consequences would have been avoided—the long, tedious days of costly hospitalization, the harassing worries to the surgeon, the heart-rending experience of vainly trying to console the grief-stricken relatives.

The educational program pointing out to the laity the dangers of self-medication in instances of abdominal pain has been of tremendous value in lowering the mortality rate from acute appendicitis in Pennsylvania, thanks to the untiring efforts of Bower and his colleagues.[1, 2] Other states would do well to emulate the example set by Pennsylvania. If the mortality statistics for acute appendicitis from each individual hospital were presented to the public, they would become painfully aware of situations resulting from poor surgical judgment on the part of an unqualified operator or from needless delay on the part of a physician in consulting with a competent surgeon.

Of great importance is the fact that surgical treatment is a highly individualized procedure, depending first upon the characteristics and condition of the patient, and second upon the skill of the surgeon in charge. Therefore, it is obvious that no hard and fast rules can be safely promulgated for all to follow with the same degree of success.

CAUSE OF HIGH MORTALITY RATE

A false philosophy has made its appearance in this nation: namely, that any young,

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inexperienced surgeon can care for complicated instances of acute appendicitis with the same favorable results that can be obtained by the older and more experienced surgeon. All of us know that this belief is grossly incorrect and has caused many needless deaths. No capable surgeon can honestly subscribe to such a false hypothesis. Yet it is the common practice in many of our leading teaching hospitals to relegate all cases of appendicitis to the surgical resident. Many attending surgeons feel personally insulted and believe that their professional abilities have been belittled if they are asked to care for a difficult case of acute appendicitis. Yet all of us can easily recall several instances in our past experience where the operative removal and postoperative care of a neglected case of perforated appendicitis taxed our skill and judgment to the utmost.

More and more, hospital staffs which publish mortality statistics and make an honest effort to obtain a postmortem examination following death, are coming to decree that the younger surgeons consult with their older colleagues in all cases of acute appendicitis. Similarly, the staff physician who allows a patient suffering from acute appendicitis to die without a correct diagnosis being made and proper treatment being instituted, is now due for a very uncomfortable time when questioned by the hospital committee on the exact circumstances of the occurrence. If this situation recurs several times, the physician should be firmly requested to take his patients elsewhere in the future. Such a program would have a very salutary effect on the mortality statistics of the hospital, and of greater importance, would protect more adequately the lives of patients who enter that particular institution with implicit faith in its professional staff.

The estimated, essentially unchanging mortality rate of approximately 20,000 deaths a year from acute appendicitis in this nation constitutes one of the tragic chapters of modern American surgery, and demands the most serious consideration by all surgeons. Any other condition which needlessly claimed an annual death rate of 20,000 persons a year, with its staggering economic loss, would be the object of widespread publicity, to the end of promptly diminishing its occurrence.

OPERATIVE PROCEDURES

Certain concepts in the treatment of acute appendicitis are now generally accepted as axiomatic. Vague recurring pain in the right lower quadrant of the abdomen is not indicative of appendicitis unless other diseases have been definitely excluded. Chronic appendicitis is not a commonly encountered disease, if we exclude "financial appendicitis." Uncomplicated cases of acute appendicitis should be operated upon with a minimum of delay, although prompt surgical intervention does not imply that adequate time should not be spent in the administration of suitable fluids to correct dehydration and improve the patient's preoperative condition.

A muscle-splitting incision, such as the one originally advocated by Lewis Linn McArthur, should be the incision of choice when the diagnosis has been made. The routine use of an incision wherein muscles are recklessly incised and fascial planes are widely opened must be severely condemned, since the infection commonly present in neglected cases of acute appendicitis frequently results in extensive wound herniations or eviscerations.

Drainage of the peritoneal cavity is now usually employed only where a walled-off abscess or a sharply localized peritonitis exists. Today, more and more surgeons are *not* draining cases of generalized peritonitis resulting from appendicitis, but are being more conservative and are saving more lives by closing the peritoneum without drainage. They then institute, postoperatively,

the original principles of Ochsner,[11] allowing nature to wall off the peritonitis in the pelvis. There the resulting abscess can be easily and safely drained from the cul-de-sac of the pouch of Douglas through either the anterior wall of the rectum or the fornices of the vaginal vault. Where the surgeon is addicted to draining a generalized peritonitis, the patient should be placed prone in bed so that his abdomen is next to the mattress, and the positive suction apparatus, so successfully employed by Rafe Chaffin of Los Angeles,[4] should be used.

LIGATION OF APPENDICAL STUMP

The argument of whether or not to invert the appendical stump still has its distinguished proponents on either side. However, the studies of my beloved former chief, Harold E. Robertson, indicating that inversion of the stump of the appendix vermiformis is not a clean surgical procedure, are steadily being more widely accepted by American surgeons. Inversion deliberately invites the formation of an abscess at the site of the appendectomy, which may later result in a fatality. No one is skillful enough to pass a needle and attached suture through the thin muscularis of the cecum, and preserve its sterility. The argument that a simple ligation of the appendical stump may subsequently permit the ligature to slip off the stump is not valid, if elementary care is exercised in using an absorbable catgut ligature and tying a proper surgical knot.

Noninversion of the appendical stump is the only sound pathologic and bacteriologic operative procedure. E. E. Larson[10] personally reported to the author several instances of fatal intestinal hemorrhage when the appendical stump was inverted without a preliminary precautionary ligation being performed.

DEVELOPMENTS IN SURGICAL TRAINING

Certain noteworthy developments during the past decade indicate a further diminishing of mortality rates. The certification of hospitals by the American College of Surgeons, as meeting the requirements for the safe and correct performance of surgery and for adequate training of future generations of surgeons, is of major importance and augers well for the future. The splendid program of post-graduate training for the young surgeon instituted by the International College of Surgeons is a further important step in this direction. The formulation of criteria for the correct training of a surgeon beyond his hospital intern years, as exemplified by the requirement of two or more post-graduate years championed by the American Medical Association, will prove of inestimable value in the increased saving of human lives. The certification of surgeons by the American Board of Surgery is a further step toward the ideal of developing in this country a group of highly proficient surgeons, in whom the public can safely place their entire confidence.

RECENT ADVANCES IN TREATMENT

The presentation of the concept of intestinal decompression by Wangensteen and his co-workers, and its further perfection through the introduction of the Miller-Abbott tube, supplanting the usually dangerous procedure of surgical drainage by enterostomy, has been of major importance in the successful care of neglected cases of acute perforated appendicitis. Numerous instances of this pathologic entity formerly considered hopelessly fatal are now being saved by prompt, properly applied intestinal decompression.

An appreciation of the vital importance of prompt identification of the chief bacteriologic organisms causing peritonitis, and the resultant institution of specific antibacteriologic therapy, have likewise caused an appreciable lowering of the mortality rate. The recent introduction of the sulfonamide group of drugs, especially sul-

fathiazole, is the latest major improvement. In a comparatively short period of time the specific bacteriostatic properties of this group have proved of tremendous, even spectacular, life-saving value. There is also a growing realization among surgeons of the great importance of an adequate intake of vitamins A, C, and the B-complex, which aid in smooth convalescence and increase the patient's resistance to infections.

There was formerly much confusion among surgeons as to the role played by the Ochsner[11] method of treatment. Fortunately, today, most of this misunderstanding has disappeared. The salient points of treatment originally presented by Ochsner for treatment of neglected acute perforated appendicitis were thoroughly sound, and still remain axiomatic when intelligently applied by a skilled surgeon. Today, however, we speak of the "deferred-operation" instead of "Ochsnerizing" a patient.

Surgeons are essentially agreed that deferment is indicated in instances where the clinical evidence, increased resistance of the patient to the infection, clearly indicates that the peritonitis is becoming localized. A deferment of surgical intervention for ten or more days has been proved to have saved many lives in cases of this type of appendicitis. However, if the patient is unable successfully to fight the peritonitis, a quick, simple appendectomy through a muscle-splitting incision, with adequate peritoneal aspiration, introduction of specific chemotherapy and anaerobic antitoxins into the peritoneal cavity, tight closure of the peritoneum, drainage of the incision from the peritoneum outward, loose re-approximation of the muscle layers only, intelligent application of a true marked Fowler's position and correct use of Ochsner's method of treatment will save many more lives than will unintelligent procrastination.

Obviously moribund patients should not be operated upon unless, for the purpose of thorough and complete peritoneal drainage, one uses the radical, long midline incision extending from the symphysis pubis to the ensiform cartilage (reported successfully employed by James F. Percy of Los Angeles[12] as a desperate "last-ditch" procedure). The more general use of blood, particularly plasma transfusions, has undoubtedly saved many lives that would previously have been lost.

In the case of the infant or the young child, surgeons now believe that aside from the difficulty of obtaining a correct detailed history of symptoms and accurately evaluating the available physical signs, the treatment of neglected instances of acute appendicitis is essentially the same as that now generally accepted for the adult. The one important difference between the child and the adult is that the inflammatory process proceeds approximately twice as fast in the child; hence the vital importance of a prompt diagnosis followed by immediate operation.

In childhood the appendix vermiformis is larger in relation to the rest of the gastrointestinal tract than in the adult. The child's appendix may actually extend deep into the true pelvis, or well over into the opposite side of the peritoneal cavity. The greater omentum of the child is a smaller structure and situated higher, affording less absolute protection in instances of peritoneal contamination than the adult's. Much of our present crystallization of opinion in treating childhood appendicitis is directly attributable to the noteworthy contributions of William E. Ladd to this subject.

ANATOMIC POSITION OF APPENDIX

The relationship of the anatomic position of the appendix vermiformis to the severity of the existent appendicitis is now more generally agreed upon than formerly, thanks to the pioneer study of Harold Brunn,[3] who demonstrated that the diseased appendix vermiformis lying in the pelvis

resulted in increased difficulty of diagnosis, increased morbidity and a higher mortality rate.

This report led the author[6] to investigate the most common anatomic position of the diseased appendix vermiformis. It was found, after a detailed clinico-pathologic study,[8] that the retrocecally situated specimen was by far the most dangerous and atypical type of acute appendicitis commonly encountered. Today, more and more surgeons are accepting this view, which at first was vigorously denied by some.

The recent series of studies by Wangensteen and his co-workers[13,14] on the mechanism of the causation of acute appendicitis and upon the mechanics involved in acute obstructive appendicitis have been highly important in clarifying the pathologic processes involved.

SUMMARY

Various advances during the past decade in the management of acute perforated appendicitis are discussed by the author. He stresses the importance of experienced surgical care in reducing the mortality rate from this disease, which even now claims 20,000 lives a year in this country.

In addition to an experienced operator, the author recommends the muscle-splitting incision, nondrainage of generalized peritonitis, specific antibacteriological therapy, proper vitamin intake in convalescence, deferred operation where peritonitis is becoming localized and noninversion of the appendical stump.

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RÉSUMÉ

Présents aspects du problème de l'appendicite

Des differents progrès faits pendant la décade passée dans le traitement de l'appendicite aiguë perforée sont discutés par l'auteur. Il affirme l'importance de la cure chirurgicale expérimentée pour réduire la mortalité de cette maladie qui encore réclame 20.000 vies chaque année dans ce pays. En addition à un expérimenté opérateur, l'auteur recommande une incision qui divise les muscles, pas de drainage de la péritonite généralisée, specifique thérapie antibactérielle, propre quantité de vitamines dans la convalescence, différée opération quand la péritonite va se localisant et pas d'inversion du troncon de l'appendice.

ZUSAMMENFASSUNG

Gegenwärtige Ansichten über das Appendicitis Problem

Es werden verschiedene Fortschritte der letzten zehn Jahre in Bezug auf die Behandlung akuter, perforierter Appendicitis, vom Autor besprochen. Er betont die Wichtigkeit von erfahrener chirurgischer Behandlung zur Herabsetzung der Sterblichkeitsziffer dieser Erkrankung, welche selbst heute noch dieses Land jährlich 20,000 Leben kostet. Ausser dem erfahrenen Operateur empfiehlt der Autor eine Muskel spaltende Incision, keine Drainage von generalisierter Peritonitis, spezifische antibakteriologische Therapie, richtige Vitaminzufuhr in der Rekonvaleszenz, Aufschub

der Operation wenn die Peritonitis sich lokalisiert und keine Inversion des Appendixstumpfes.

SUMARIO

Aspectos actuales del problema de la apendicitis

Discute el autor varios adelantos de la última década, al tratar de la apendicitis aguda perforada. Hace hincapié en la importancia de la atención quirúrgica para disminuir la proporción de la mortalidad debida a esta enfermedad, que aún hoy siega 20,000 vidas al año en este país.

Además de un cirujano experimentado, recomienda el autor que la incisión corte el músculo; que no se canalice la peritonitis generalizada; terapéutica antibacteriológica especifica; suficiente ingestión de vitaminas durante la convalecencia, retrasar la operación cuando la peritonitis se va localizando y la no inversión del pedículo apendicular.

RIASSUNTO

Aspetti presenti del problema dell'appendicite

Vari progressi fatti durante la decade passata nel trattamento dell'appendicite acuta perforata sono discussi dall'autore. Egli afferma l'importanza della cura chirurgica esperta nel ridurre la mortalità di questa malattia che ancora richiede 20.000 vite all'anno in questo paese. In aggiunta a un esperto operatore, l'A. raccomanda un'incisione che divida i muscoli, non drenaggio della peritonite generalizzata, specifica terapia antibatterica, appropriata amministrazione di vitamine nella convalescenza, ritardata operazione quando la peritonite sta localizzandosi e non inversione del moncone dell'appendice.

Carcinoma of the Thyroid

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THERE has been an increasing interest in carcinoma of the thyroid gland during the past few years. This is due, probably, to the apparent increase in the incidence of the disease.

Until recently a great deal of mystery surrounded tumors of the thyroid gland. It was thought that carcinoma of the thyroid was an exceptional disease and that it did not follow the general laws of tumor behavior. Even in the past decade it was thought that benign tumors of the thyroid were capable of metastasizing. However, progress in the treatment of malignant tumors of the thyroid has kept pace with the development of thyroid surgery in general.

The apparent increase in thyroid carcinoma is no doubt due to the fact that more nodular and hyperplastic goiters are now being removed, and that pathologic studies of the removed glands have become more intensive. We have come to realize that an innocent-appearing, benign, solitary adenoma will sometimes contain an extremely malignant carcinoma within its capsule.

The curability of cancer of the thyroid has likewise been demonstrated. We realize that cancer of the thyroid, as well as cancer in other parts of the body, has an early stage, and that its curability depends upon the alertness of the diagnostician and the pathologist and the thoroughness of the surgeon in removing these early growths.

We here wish to review the subject briefly and to present a series of cases of carcinoma of the thyroid gland found in a general surgical practice extending over fifteen years, together with the results and the follow-up over that period.

INCIDENCE

The reported incidence of malignancies of the thyroid gland varies with different clinics and individuals, according to their classification and criteria of malignancy. Most of their figures give the ratio of malignant to benign tumors. For this study the available statistics published by the United States Bureau of Public Health[1] were reviewed; also the ratio of carcinoma of the thyroid gland to cancer in all sites as reported from several large cities throughout the country.

It was found that in 1937 in Cook County (Chicago), out of 14,119 cases of cancer in all sites, 53 cases were cancer of the thyroid gland. In the same year 2,824 cases of cancer in all sites were reported in New Orleans; of these 11 were carcinoma of the thyroid gland. From Pittsburgh and the surrounding county 5,687 cases of carcinoma in all sites, with 37 cases in the thyroid gland, were reported. In 1938 in Dallas and the surrounding county there were 1,588 cases of carcinoma in all sites; 14 of these were carcinoma of the thyroid gland. More accurate statistics are, and probably always will be, obtainable from the larger clinics specializing in goiter treatment.

Berard[2] states that in goiter areas 2.5 to 4 per cent of all malignant tumors affect the thyroid gland, whereas in goiter-free areas the percentage is only .4 to .5 per cent of all malignancies. Wegelin[3] states that where goiter is endemic, malignant tumors of the thyroid occur in greater numbers. Dunhill[4] reports 38 cases occurring in 2,127 operations for all types of goiter, a percentage of 1.78. Shallow, Lemmon and Saledby re-

port an incidence of 24 cases among 1,096 patients suffering from diseases of the thyroid gland in Jefferson Hospital, a percentage of 2.18.

In 1921 Wilson[5] reported an incidence of 1.7 per cent at the Mayo Clinic. Pemberton,[6] however, notes that since 1919 the ratio of malignant to benign tumors of the thyroid gland at the Mayo Clinic has risen from 2 to 4.9 per cent. From 1916 to 1930 in the Lahey Clinic there have been 187 proved cases of cancer of the thyroid gland in 6,535 patients operated upon for thyroid disease, a known incidence of 2.86 per cent. In addition to these, many other patients had thyroid malignancies which had advanced to such a state that no operation was possible.

In our series of 780 cases of goiter, there were 10 cases of carcinoma of the thyroid gland, an incidence of 1.26 per cent. This figure has increased from .21 to 1.26 per cent in the past five years.

SEX AND AGE FACTORS

In this series of cases all of the patients were women. Figures throughout the country, however, are not comparable. In Pemberton's series of 774 cases, 282 were males and 492 were females, a ratio of 1 to 1.74. In the same period the ratio of males to females for all benign nodular goiters, exclusive of exophthalmic goiter, was 1 to 5.07.

Beuhler and Spetse find that 60 per cent of cases occur in females and 40 per cent in males. Schreiner and Murphy[7] in 1934 reported 69 per cent in females and 31 per cent in males. Levinson[8] gave 51.4 per cent for females and 48.6 per cent for males. From the above data it can be concluded that males with nodular goiter are more likely to develop malignancies than females.

Generally speaking, the age in our series of cases corresponds with that for carcinoma situated elsewhere in the body. However, it will be noted that the general age incidence was somewhat less than for carcinoma in general, 80 per cent of our patients being from 40 to 50 years of age. The mean age was 46.4 years.

The available statistics indicate that carcinoma of the thyroid gland is much more common in children than is generally believed. The Bureau of Vital Statistics reports 154 cases of carcinoma of the thyroid, in all of which the patients died. Of these 4 patients were in the second decade of life, and 10 were in the first three decades. The 10 patients under 30 years of age constituted about 6.66 per cent of the series.

This seems to be in accord with the warning of Kennedy,[9] who stresses that any mass in the thyroid gland in children, regardless of how innocent it appears, should be suspected of having malignant qualities. In emphasizing this, Pemberton points out that a great percentage of malignant tumors in children are the papillary or malignant adenomatous type of low-grade malignancy, therefore in the early stages amenable to treatment by surgery. The old idea of deferring operation for nodular goiters until the patient is 25 or 30 is thus proved erroneous.

ETIOLOGY

Probably the most important etiological factor in carcinoma of the thyroid is a pre-existing adenoma. Figures from all over the country show that from 87 to 93 per cent of thyroid malignancies arise in pre-existing adenomas. The large number of malignant tumors that arise from lateral aberrant thyroid tissue is significant. Lahey has pointed out that among the patients operated upon at his clinic for lateral aberrant thyroid tissue, malignant degeneration had taken place in one-third. He states that all lateral aberrant thyroids are papilliferous in character and all are potentially malignant. He also points out that these tumors are capable of metastasizing into the thyroid gland.

CLASSIFICATION OF MALIGNANCY

Classification of malignancies of the thyroid gland is confusing, varying with almost every author. This is probably because each author makes a classification that will fit his own cases and those of his clinic. Allen Graham[10] presents a workable classification which divides carcinoma of the thyroid gland into (1) scirrhous carcinoma, or carcinoma simplex; (2) papilliferous adenocarcinoma; (3) malignant adenoma.

Clute and Warren[11] of the Lahey Clinic have utilized a very workable classification in an attempt to correlate the pathologic and clinical aspects of the disease. They divide all cases into three groups: (1) the low, or potential, malignancy; (2) definite malignancy, or adenocarcinoma of the thyroid; (3) hopeless malignancies. Group 1 is subdivided pathologically into two classes: (a) adenoma with blood vessel invasion; (b) papillary adenocystoma.

There is some discussion as to whether or not adenomas showing tissue with blood vessel invasion are malignant. However, in their follow-up Clute and Warren have shown that a definite percentage of these cases go on to metastasize. The appearance of the ones which have metastasized and the ones which have not were originally the same. Therefore, this condition is rightly classified as potentially malignant. These authors also regard the papillary adenocystoma as malignant if it shows evidence of capsule, blood vessel or lymph vessel involvement. In this group the tumor is cystic, grossly encapsulated, and sometimes shows gross evidence of invasion into the veins.

Clute and Warren place all cases of adenocarcinoma of the thyroid gland in group 2. In these tumors the usually accepted criteria of malignancy are anaplasia and invasion of the surrounding tissues. In all of this group, however, some evidence of glandular structure is preserved. Histologically, these authors subdivide this group into the papillary adenocarcinoma and the nonpapillary, or alveolar, type. Of their patients in this group 54.8 per cent died of cancer; 68 per cent either died or had a recurrence of the disease.

Group 3 consists of the hopeless malignancies. It is subdivided into four classes:

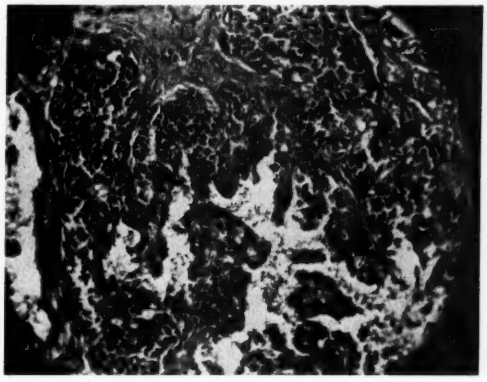

Fig. 1. Papillary adenocarcinoma.

(a) squamous cell, or epidermoid, carcinoma; (b) carcinoma simplex; (c) giant-cell carcinoma; (d) fibrosarcoma, which is extremely rare.

Probably the most universally used classification is that advocated by Wilson of the Mayo Clinic in 1914. He groups malignancies as: (1) papillary adenocarcinoma; (2) adenocarcinoma in an adenoma; (3) diffuse adenocarcinoma; (4) epithelioma; (5) sarcoma. We have used this classification in our small group of cases.

Papillary adenocarcinoma (Fig. 1) is probably the most common malignancy. The tumor is characterized by papillary structure, and in most cases the cells are fairly well differentiated. They usually occur within an adenoma, but may spring from a part of the gland free from adenomas or may, when not encapsulated, involve the lymph nodes early. Quite frequently the lymph nodes are discernibly enlarged where there is any palpable tumor in the substance of the gland. Papillary adenocarcinomas are for the most part of a low-

grade of malignancy. However, in one of our cases, in spite of the fact that histologically the tissue did not appear to be extremely malignant, the patient died within six months after the operation, with extensive metastasis to the regional lymph nodes (Fig. 2), lungs, pleura and mediastinum.

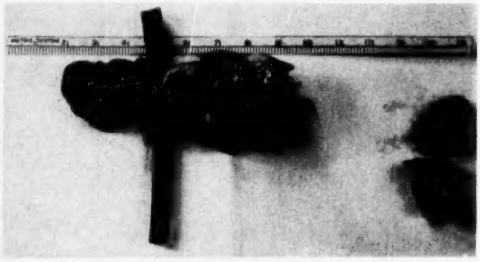

Fig. 2. Gross specimen showing lymphatic metastasis.

Adenocarcinoma in an adenoma (Fig. 3) is merely a malignant change that has taken place within an adenoma. It occurs most commonly in the so-called fetal type of adenoma. The tumors are usually single, but may spring up independently in different parts of the gland. Histologically, they are featured by alveolar arrangement of cords of cells which contain a variable amount of colloid. The cells usually contain a small amount of opaque, granular cytoplasm, and are quite heavily staining. The characteristic feature of this type of tumor is that its regional lymph nodes are never involved until after the capsule of the adenoma has been invaded. However, many a surgeon has lulled himself into a false sense of security when operating upon these cases because the capsule was not invaded.

In these tumors metastasis follows the blood stream, as is shown by the fact that frequently the veins in the region of the thyroid, including the internal jugular, are often invaded, even in spite of an intact capsule on the adenoma. These tumors, too, are mostly of a low-grade of malignancy and are very amenable to radical surgical and roentgen ray therapy. There were two cases of this type in our series.

Diffuse adenocarcinoma (Fig. 4) may arise in a pre-existing benign nodule or may spring up spontaneously in a nongoitrous gland. This type is the most highly malignant of the more common tumors of the thyroid gland. The cellular structure varies

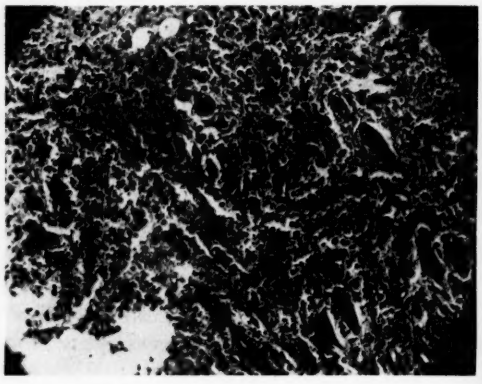

Fig. 3. Adenocarcinoma occurring in an adenoma.

from strands of well-arranged, glandular-appearing structures to sections producing no evidence of any remaining glandular structure. This type is often confused with sarcoma. It is usually more easily identified preoperatively than the others because of its tendency to invade the surrounding structures early and to produce distant metastasis.

Epitheliomas are, for the most part, the squamous cell type, probably arising from remnants of the thyroglossal duct or other embryonal structures in the gland. Some writers maintain that this is due to a metaplasia of the cells, which had an adeno arrangement previously. None of our cases fell into this group.

Sarcomas of the thyroid gland are uncommon. They are quite typical of sarcomatous lesions in other parts of the body and metastasize for the most part by the blood stream. None of our cases fell under this heading.

SYMPTOMATOLOGY

The classical symptoms of carcinoma of the thyroid gland are indicative of a fairly well advanced stage of the disease. They are difficulty in breathing, dysphagia, hoarseness, a sense of fullness in the neck and pain in the neck. The usual history records that the patient noticed a swelling in the neck a short time before coming for examination, or a sudden increase in the size of a pre-existing adenoma.

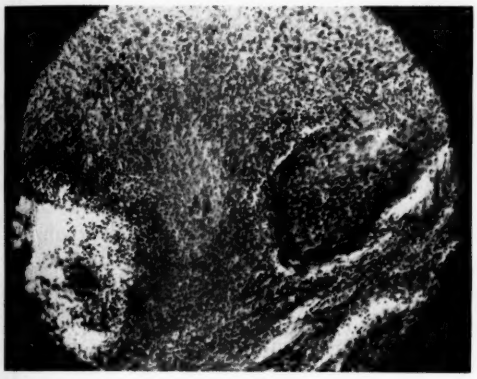

Fig. 4. Diffuse adenocarcinoma.

Since 90 per cent of carcinomas of the thyroid gland occur in adenomata, the usual symptomatology is that of the thyroid condition for which the patient presents himself. On examination of the gland, the findings are usually those of an adenoma or adenomata. As a rule, the gland is harder than in the average case. At times hard areas can be made out within the nodules, or there may be fixation of a soft nodule, which should always be considered suspicious. Oftentimes the patient has a brawny, hard, indurated, fixed tumor beside the thyroid gland, spreading downward toward the mediastinum. Marked firmness or fixation of an adenoma is always suggestive of a malignant change.

Once syphilis and mediastinal tumor have been ruled out, voice changes with the vocal cord on either side fixed or out of its normal position are almost pathognomonic of carcinoma of the thyroid, although we have seen several cases with vocal cord paralysis in which benign tumor was found and removed. In the absence of syphilis, aortic aneurysm or mitral stenosis, a benign tumor frequently produces interference of the function of the cord by pressure, but it is extremely rare for such a tumor to produce the combination of hoarseness and fixation of the cord.

The lowest basal metabolic rate in our series of cases was a minus 1, the highest plus 23, the average plus 15. These figures from this small series indicate that carcinoma of the thyroid gland probably has no appreciable effect on the basal metabolism.

DIAGNOSIS

The differential diagnosis of carcinoma of the thyroid gland is very difficult preoperatively. Apparently innocent adenomata may exhibit marked vessel ingrowth. This may occur even before any irregularity or fixation can be made out from invasion of the capsule; and in the beginning, even though it ruptures through the capsule, fixation is hard to detect. Marked firmness and fixation of the adenoma are suggestive of an existing malignancy.

Differentiation must be made from Riedel's chronic thyroiditis, Hashimoto's disease, subacute thyroiditis and calcified adenomata.

In our series correct diagnosis was made preoperatively in 6 cases. The diagnosis was not made, or even suspected, in 2 cases. In 4 of the cases in which the diagnosis was not suspected, the growth was still operable; in 1 it was inoperable.

PROGNOSIS

The prognosis of carcinoma of the thyroid gland varies, depending upon the advancement of the disease at the time the patient presents himself and the type of malignancy in the gland. We are certain that

as surgeons and pathologists come to know more about the condition, the outlook will be definitely better for the patient. This is shown by the gradual diminution of the mortality rate in carcinoma of the thyroid gland since first described.

In 1835 Braun collected 34 cases in which thyroidectomies had been done because of malignancy. The operative mortality was 64 per cent, and in addition 22 per cent died of recurrence. In 1902 Ehrhardt[12] reported 16 cases with an operative mortality of 31 per cent and a known fatal termination of 43 per cent. He was unable to follow some of the cases. In 1906 Beuhler reported 11 cases with an operative mortality of 18 per cent; 27 per cent were well after one year and 9 per cent after five years; 27 per cent were lost track of and 66 per cent were known fatalities.

In 1918 Balfour[13] reported 63 cases, with an operative mortality of 6 per cent; 35 per cent were lost track of and 65 per cent had a known fatal termination. Pemberton[14] presents a series of 774 cases, 384 of which he considered operable to the point at which a thyroidectomy was done. In the patients treated by thyroidectomy only, the five-year survival rate was 69.2 per cent; in those having thyroidectomy plus irradiation the survival rate was 72.9 per cent; in those having irradiation alone the survival rate was 23.2 per cent. These figures are indeed remarkable.

Our series is not large enough nor traced over a long enough period to be significant. However, of the 7 cases operated upon there was no operative mortality rate.

TREATMENT

The prophylactic phase of treatment merits more study than the curative, for, while surgery and irradiation deal with a process already present, the methods of eradication are more or less standardized.

Statistics from all over the world show that 90 per cent of the cases of carcinoma of the thyroid gland originate in adenomatous goiters or in adenomas. Experience in the eradication of goiter in various cantons in Switzerland and in the different goiter belts in the United States proves that adenomatous goiter can be definitely eliminated in one generation by the administration of iodine or thyroid extract to all pregnant mothers. The administration of these drugs can in no way harm the patient, and we cannot understand why they are not used more extensively. A few drops of iodine given daily throughout pregnancy and until the child reaches maturity would, in our opinion, eliminate all adenomatous goiters, and therefore automatically 90 per cent of the thyroid malignancies.

There is a great deal of debate among the profession about the advisability of removing nontoxic adenomatas. In view of the fact that even the most conservative of available statistics estimate that 1 per cent of all nodular goiters become malignant and the operative mortality of all types of nodular goiter, both toxic and nontoxic, falls far below this figure, we believe that carcinoma of the thyroid would be much less common if physicians advised the removal of all nodules in the thyroid. This is especially applicable in children, because a high percentage of the nodules in the thyroids of children have been shown to be malignant. From this standpoint alone we wish to re-emphasize that all nodular goiters should be removed.

The surgical management of these cases, once they have developed, is no different than the thorough surgery of goiter. Regardless of whether the lesions have invaded the capsule or not, the dissection should be quite thorough. In adenocarcinoma, and it is important to know this at the time of operation, the neck should be quite widely dissected. In the papillary type, where there is any evidence of regional lymphatic involvement, the dissection should include a block dissection of the lymphatics of the

neck, with removal of the sternocleidomastoid muscle and the internal jugular vein, also their accessory structures. In the obviously more extensive cases it is well to do a tracheotomy preceding or along with surgery, so that the dissection will be sufficiently radical to eliminate the disease. These cases should all be irradiated postoperatively by a competent radiotherapist.

SUMMARY

On the basis of recent literature and fifteen years of general surgical practice, the authors discuss carcinoma of the thyroid gland as regards incidence, etiology, types of malignancy, symptomatology and treatment.

Prenatal administration of iodine or thyroid extract as a preventive measure is recommended. Emphasis is placed upon the importance of the prophylactic removal of all adenomata in the thyroid gland.

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RÉSUMÉ

Carcinome de la thyroïde

Les auteurs discutent le carcinome de la thyroïde à l'égard de la frequence, l'etiologie, les types de tumeurs malines, la symptômatologie et le traitement, sur les bases de la récente litterature et 15 années de pratique chirurgicale generale. Administration prénatale de iode ou d'extract thyroïdien est recommandée comme mesure préventive. Particulière force est donnée à l'importance de l'asportation de tous les adenomes de la thyroïde come mesure prophylactique.

ZUSAMMENFASSUNG

Carcinom der Schilddrüse

Auf Grundlage der jüngsten Literatur und fünfzehn Jahren allgemeiner chirurgischer Praxis, bespricht der Autor das Carcinom der Schilddrüse in Bezug auf Auftreten, Aetiologie, Arten der Malignität, Symptomatologie und Behandlung.

Prenatale Zuführung von Jod und Thyroidextrakt werden als Prophylaxis empfohlen. Es wird die Wichtigkeit der prophylaktischen Entfernung aller Adenome der Schilddrüse betont.

SUMARIO

Carcinoma de la tiroides

Basándose en publicaciones recientes y en quince años de práctica quirúrgica en general, los autores discuten el carcinoma de la glándula tiroides, por lo que se refiere a incidencia, etiología, tipos de malignidad, sintomatología y tratamiento.

La administración prenatal de yodo o extracto de tiroidina se recomienda como medida preventiva. Se hace hincapié en la importancio de la extirpación profiláctica de todo el adenoma de la glándula tiroides.

RIASSUNTO

Carcinoma della tiroide

Gli Aa. discutono il carcinoma della tiroide, per quel che riguarda frequenza, etiologia, tipi di processi maligni, sintomatologia e trattamento, sulle basi della recente letteratura e 15 anni di pratica chirurgica generica. Viene raccomandata somministrazione prenatale di iodio o di estratto tiroideo come misura profilattica. Particolare rilievo vien dato all'importanza dell'asportazione di tutti gli adenomi della tiroide come misura profilattica.

The Optimum Age for Cleft Palate Operation

WITH SPECIAL REFERENCE TO NORMAL SPEECH DEVELOPMENT

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THE optimum age at which a cleft palate should receive surgical treatment has been the subject of constant discussion. Von Langenbeck[1] states that in his opinion "staphylorraphy should not be performed under the age of 7 years, and then only if the child is in good physical condition." Dorrance[2] believes that "the safest age to operate for cleft palate is about the fifth year of life."

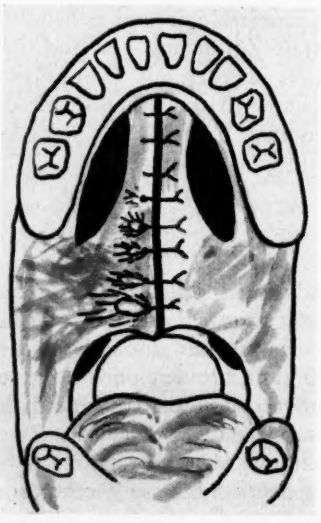

Fig. 1. Von Langenbeck technic for cleft palate operation. After primary incisions, the cleft is closed but the medial portion of oral mucous membrane is under great tension.

Ernst[3] writes, "Due to the effect of deformation by an operation in early life, I do not operate until after the completion of the first dentition, that is, at the end of the third year of life." Brown believes that the first stage of the operation should be performed when the patient is 6 to 9 months old, and be completed one year later, before wrong speech habits have been established.

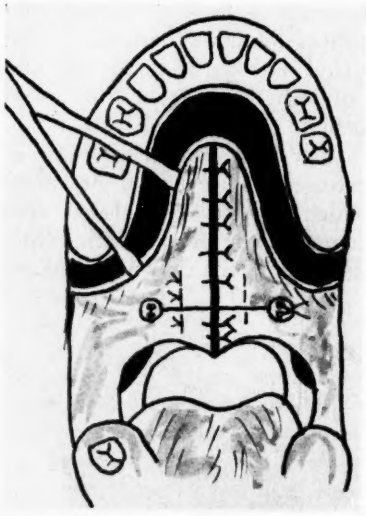

Fig. 2. Dorrance technic for cleft palate operation. After primary incisions, the mucous periosteum of the palate is pushed back and sutured.

Davis[4] is of the opinion that "palates with clefts not extending through the alveolar process are preferably connected between the ninth and twentieth months." Veau[5] feels that "the optimal age for operation of a cleft palate is between the twelfth and twenty-fourth months of life."

The above opinions are those of outstanding surgeons who have notably improved the operation of cleft palate and whose operative methods are most frequently used. It will be noted that there is a wide variation of opinion concerning the optimum age for operation.

*Chief of the Private Hospital for Plastic Surgery, Karlsruhe, Germany, from 1928 to 1937.

Fig. 3. Brown and Davis technic for cleft palate operation showing the osteouranoplasty in early childhood. Bone and oral mucous membrane of each side of the cleft are drawn to the middle and tied with two pieces of tape.

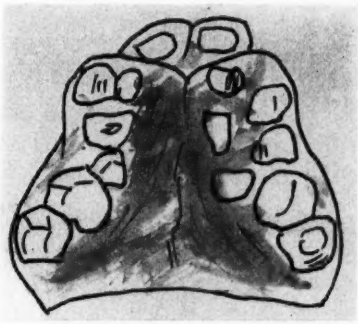

Fig. 4. A case eleven years after the osteouranoplasty showing how the scar tissue of the palate produced an irregular growth of jaw and teeth.

OPERATIVE PROCEDURES

In general, the age for the operation depends on the method to be employed in the particular case. In selecting the most advantageous method of operation, one must consider the following factors:

1. Operative mortality.
2. The best possible anatomical closure.
3. The avoidance of injuries to dentition that would later produce deformities of the jaw and face, likely to develop as the child grows older.
4. Creation of conditions for the development of normal speech.

Almost all modern operative methods for cleft palate have been based on the classic operation of von Langenbeck. This operation is performed (1) by making vertical slits in the oral mucoperiosteum near the alveolar arch on either side; (2) by freshening the borders of the cleft; (3) by drawing together the undermined flaps and finally suturing the medial portion (Fig. 1).

Many surgeons have modified this technic with procedures planned to provide a good closure as well as to secure proper function, including correct phonation.

Dorrance has introduced a "push back" method in which the palatal mucoperiosteum is freed from the underlying bone on either side of the cleft and is pushed back to the posterior wall of the nasopharynx (Fig. 2). Through this procedure a good velopharyngeal closure is obtained. Theoretically, this method should enable the patient to speak distinctly after the operation; but, as will be explained later, it rarely succeeds.

Ernst[5] and Halle[6] advise a similar procedure. Brown and Davis[7] perform osteouranoplasty, a dissection of the bone of the hard palate on either side of the split, in early childhood. The bone and oral mucous membrane of either side are then moved to the middle of the palate covering the cleft (Fig. 3). This produces a wide, deep wound beside the alveolar arch on either side of the palate, as shown in Figure 3, a wound which will later be filled in by scar tissue. This scar tissue contracts the alveolar arch, later producing an irregular growth of jaw and teeth, as shown in Figure 4.

Veau's operative technic is quite different from the other methods mentioned. Veau takes into consideration, as much as possible, the age of the infant and the tenderness of the tissue. For instance, when there is a cleft in the soft palate (Fig. 5), the borders of the cleft velum are so freshened that they are separated into their three layers (oral mucous membrane, muscular and nasal mucous membrane), and an intramuscular wire suture brings the cut and

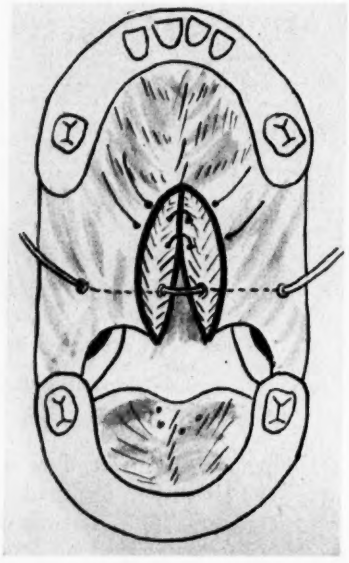

Fig. 5. Cleft of velum operated with Veau technic at one year of age. After primary incisions and wire suture, borders of the cleft are separated in three layers (oral mucous membrane, velum muscles and nasal mucous membrane) prior to suturing.

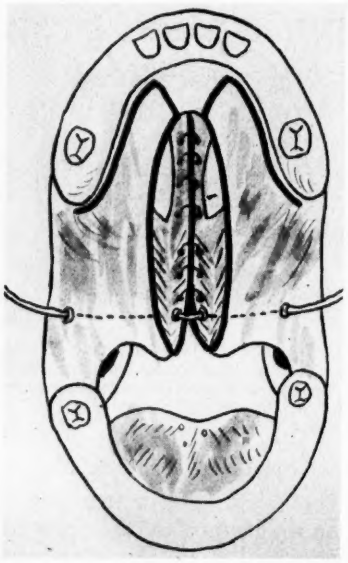

Fig. 6. Cleft of hard and soft palate operated with Veau technic at one year of age. After primary incisions and wire suture, the borders of the cleft are separated in their layers. This sketch shows the sutured nasal mucous membrane.

freshened borders together (Fig. 5). When the cleft involves the hard palate (Fig. 6), it is necessary to reconstruct the floor of the nasal cavity with a suture of the nasal mucous membrane (Figs. 6 and 7).

Since the von Langenbeck method does not take this into consideration, a large wound remains on the floor of the nasal cavity (Fig. 8), which later is filled in by scar tissue.[5] The presence of scar tissue is very harmful since it retracts the velum; hence, the velopharyngeal closure cannot be obtained and defective speech results.

In the case of a unilateral lip-jaw-palate split, the operation is performed by Veau in two stages. The first operation is performed at approximately the fourth month of life, when the baby has reached a weight of about 15 pounds and is in good physical condition. In the first stage of the operation—contrary to all other operative methods—the harelip and the cleft of the hard palate are closed simultaneously. By means of this procedure a better cosmetic result is obtained. In the second stage of the operation, performed about one year later, the remaining cleft velum is closed.

The bilateral lip-jaw-palate split should be operated on in a manner similar to the unilateral procedure.

Figure 9 shows a case of unilateral lip-jaw-palate split and Figure 10 shows a case of bilateral cleft operation. Figures 9*d* and 10*d* (plaster impressions) show the usual conditions of the hard palate after the first stage of the operation. It is of importance in considering the above operations to study their relation to the development of normal speech.

DELAYED SURGERY

Von Langenbeck[1] and his followers, Dorrance,[2] Ernst,[3] Halle,[6] and others, usually perform this operation at about the fifth year of life. They feel justified in withholding operation until this period, for,

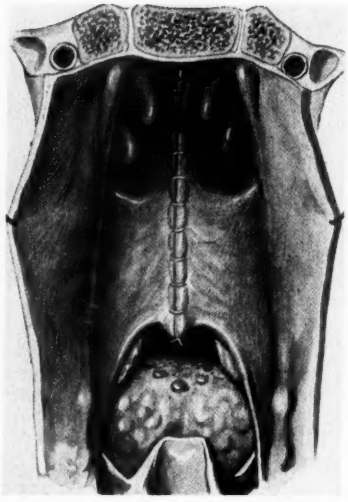

Fig. 7. View of the nasal mucous membrane which has been sutured separately and a primary junction formed, following the technic of Veau, as seen from above the nasopharynx.

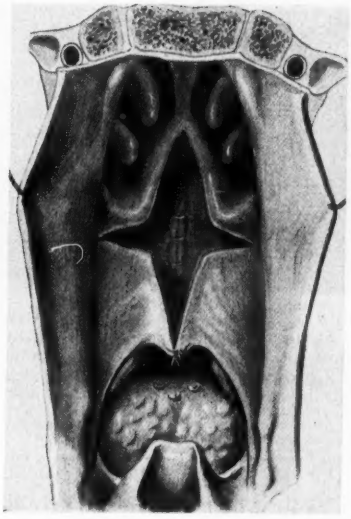

Fig. 8. View of the nasal mucous membrane with large wounded surface which will be filled in by scar tissue due to the suturing of only the oral mucous membrane in the von Langenbeck classic operation, as seen from above the nasopharynx.

should the operation be performed before this time, the ultimate results would be speculative. Until the fifth year of life tissues are not sufficiently developed to withstand the necessary rough cuts and underminings. Unexpected by-injuries may occur in a younger child, and the success of the entire operation may become doubtful.

However, since such an operation can take place only when this tissue is adequately developed, normal speech will be difficult to achieve, in spite of the fact that the advocates of the von Langenbeck technic have modified the method with the intention of getting good speech results. Unsatisfactory speech usually results because, prior to the fifth year of life, the patient has already nasalized three years or more. He has developed a language with many anomalous sounds. After the operation he has to undergo a difficult speech education —an effort requiring great perseverance on the part of the patient, his associates, the operator and the speech instructor. At times this education has to be continued for many years, and even then the results obtained in the majority of cases are not satisfactory. The parents and relatives of the patient judge the success of the operation only by the speech results; and since they are usually disappointed, they consider the whole procedure a failure.

EARLY SURGERY

Brown, Davis[4] and Veau[6] operate in early childhood in order to avoid these complications relating to speech. They are of the opinion that the operation should be performed and the cleft palate closed before the patient learns to speak. The closing of the palate should be so complete that the patient is able to develop normal speech. The osteouranoplasty suggested by Brown and Davis has one disadvantage in that it is a rather rough procedure for this early age and does not take into consideration the formation of scar tissue which usually follows. The contraction of this tissue may be detrimental in the development of the alveolar arch and teeth, as shown in Figure 4.

Fig. 9. One of the author's cases of unilateral lip-jaw-palate split, in which the cleft of the lip, the jaw and the hard palate were closed simultaneously in one stage of operation at three months of age. *A*. Before the operation. *B*. Four weeks after the operation. *C*. Appearance of the lip and nose two years after the operation. *D*. Condition of the hard palate after the first stage of the operation, shown by a plaster impression. The cleft which remained was closed by the second stage of the operation which was performed nine months later.

With the operative technic of Veau, performed at the end of the first year, all these objections are avoided as far as possible. We have found this technic most successful (Figs. 9 and 10).

SPEECH RESULTS

A report of the original series of 50 cases treated by the above method was published by the author in 1935.[9] At the present time the number has increased to 196, indicating that the anatomic and speech results are most satisfactory.

Among these 196 patients were 96 in whom the palate was restored in the first year of life and who were examined later when speech had fully developed. The results were most gratifying in that all except 6 had developed normal speech without the slightest evidence of any defect. In these 6 the uvula had opened, necessitating a second operation.

We were able to re-examine 50 patients who underwent the operation at the end of the second year of life. Here the speech results were not as satisfactory, since only 40 children spoke normally, while the other 10 nasalized, in spite of the fact that the anatomical closure was perfect. It would seem, therefore, that satisfactory speech results decrease as the age at which the operation is performed increases.

These speech results approximate those published by Veau, who stated that 75 per cent of his 500 patients operated upon under the age of one year and 70 per cent operated upon under the age of two years were speaking normally. It is evident, therefore, that if the cleft palate is closed at about the end of the first year of life, the child will grow up speaking normally, without the necessity of speech education and its uncertain results. The tenderness of the tissue is no contraindication, since the cases of Veau, as well as those reported in this paper, prove that the anatomical closure of the palate can be obtained in at least 85 per cent.

The main criticism made of the operation in early childhood is that the operative mortality might be too great. However, in Veau's group of children *operated upon before the end of the first year of life*, there was a mortality of only 1.4 per cent.

Among our 196 cases there have been only 2 fatalities, and these deaths were not caused by the operation. One case was a premature baby with congenital lues, the operation being performed only at the insistence of the parents. The second patient died from the rare condition of anthrax of the lungs. Until admission to the hospital, this patient had been fed with the milk from a cow suffering from anthrax.

Fig. 10. One of the author's cases of bilateral lip-jaw-palate split in which the clefts of the lip, the jaw and the hard palate were closed simultaneously in one stage of operation at the age of three months. *A*. Before the operation. *B*. Condition of the palate before the operation, shown by a plaster impression. *C*. Four weeks after the operation. *D*. Condition of the alveolar arch and the hard palate after the first stage of the operation, shown by a plaster impression. The soft palate cleft which remained was closed by a second stage of the operation performed nine months later.

Among the 196 cases reported were patients suffering from lip-jaw-palate split. In these cases the lip must be operated on in the first month of life, whether or not one uses the operative method of Veau.

SUMMARY

The author recommends the end of the first year of life, or when the infant first begins to speak, as the most favorable age for a cleft palate operation. This is based not only on the anatomical results obtained, but on the normal development of speech in 196 cases operated upon at this age by the author. Veau's technic was found most adaptable for treatment at this early age.

The osteouranoplasty of Brown and Davis may also be used, but this operation is somewhat severe and may interfere with the development of jaw and teeth.

If the age of two years is missed, it is better to delay operation until the fifth year. At this age the operation of von Langenbeck, Dorrance, Ernst and Halle, and others may be used. It must be noted, however, that the speech results are not always satisfactory.

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RÉSUMÉ

Le meilleur âge pour l'opération des fentes du palais

L'auteur recommande la fin de la première année de vie comme l'âge le plus favorable pour opérer les fentes du palais, ou bien quand l'enfant commence à parler; ça a sa raison non seulement dans des résultats anatomiques obtenus, mais aussi sur le normal développement de la parole dans 196 cas opérés à cet âge par l'auteur. La technique de Veau a été trouvée la plus adaptable pour le traitment à cet âge.

La ostéouranoplastique de Brown et Davis peut être aussi employée, mais cette opération est un peu serieuse et elle peut déranger le développement de la mandibule et des dents.

Si on manque l'âge de deux ans, il est mieux de différer l'opération aux cinq ans. A cet âge l'opération de Langenbeck, Dorrance, Ernst et Halle peut être employée. On doit remarquer pourtant que les résultats de la parole ne sont pas toujours satisfaisants.

ZUSAMMENFASSUNG

Das beste Alter zur Operation des Spaltgaumen

Der Autor empfiehlt das Ende des ersten Lebensjahres, oder den Zeitpunkt in welchem das Kind zu sprechen beginnt, als das best geeignete Alter zur Operation des Spaltgaumen. Diese Ansicht ist nicht nur auf Grundlage der anatomischen Erfolge aufgebaut, sondern auch auf der normalen Entwicklung der Sprache von 196 Fällen, welche in diesem Alter vom Autor operiert wurden. Die Technik von Veau erwies sich als die geeignetste für dieses frühe Alter.

Die Osteo-Uranoplastik von Brown und Davis kann auch verwendet werden, doch ist diese Operation eine eher schwere und kann die Entwicklung von Kiefer und Zähnen beeinträchtigen.

Wenn das Alter von zwei Jahren versäumt wurde, so ist es besser mit der Operation bis zum fünften Lebensjahr zu warten. In diesem Alter kann die Operation nach von Langenbeck, Dorrance, Ernst und Halle und anderen verwendet werden. Es sei jedoch festgestellt, dass die Spracherfolge nicht immer befriedigend sind.

SUMARIO

La edad óptima para la operación de la hendidura palatina

El autor recomienda el final del primer año de la vida, o cuando el niño empieza a hablar, como la más favorable edad para la operación de la hendidura palatina. Esto está basado no solamente en los resultados anatómicos obtenidos, sino también en el desarrollo normal del habla, en 196 casos operados en esta edad, por el autor. Se halló que la técnica de Veau es la más adaptable para el tratamiento en esta temprana edad.

La osteo-uranoplastía de Brown y Davis puede también utilizarse, pero esta operación es algo severa y puede modificar el desarrollo del maxilar y los dientes.

Si se dejan pasar los primeros dos años de edad, es mejor demorar la operación hasta los cinco años de edad. A esta edad las operaciónes de von Langenbeck, Dorrance, Ernst y Halle y otros, pueden practicarse. Debe anotarse, sin embargo, que los resultados en cuanto al habla no siempre son satisfactorios.

RIASSUNTO

L'età migliore per l'operazione delle fessure del palato

L'A. raccomanda la fine del primo anno di vita come la più favorevole età per operare le fessure del palato, oppure quando il bambino comincia a parlare. Ciò si basa non solo su risultati anatomici ottenuti ma sul normale sviluppo della parola in 196 casi operati a questa età dall'A. La tecnica di Veau fu trovata la più adatta per il trattamento a quest'età. La osteourano-plastica di Brown e Davis può anche essere usata, ma questa operazione è un po'seria e può interferire con lo sviluppo della mandibola e dei denti.

Se si oltrepassa l'età dei due anni, è meglio posporre l'operazione ai 5 anni. A quest'a età l'operazione di Langenbeck, Dorrance, Ernst e Halle può essere usata. Deve essere notato, però, che i risultati della parola non sono sempre soddisfacenti.

Operative Treatment of Buerger's Disease

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DURING the last sixteen months I have had the opportunity of operating upon 14 cases of Buerger's disease, using various operative methods. Although it is still naturally impossible to judge of the permanent effects, in some of the cases the result of the operation was quite unsatisfactory; it is, therefore, the purpose of this paper to demonstrate that in some cases of Buerger's disease even several operations, immediately following each other, may fail to produce results.

It is striking that in the papers of other authors dealing with this subject so evident a failure of the modern operative methods has not been pointed out.

Since both myself and my colleague, Dr. E. G. Joseph, had little opportunity of seeing cases of this type in our former European practice, it is highly probable that climatic as well as nervous and social factors may be active in producing this particular type of reaction among the variegated population of this country.

Before reporting the case histories, the following points must be made clear:

1. The classical *description* of thromboangiitis obliterans was given by Leo Buerger in 1903. Buerger showed that in this condition smaller as well as larger arteries and veins are pathologically changed, these changes being inflammatory in nature. The vessels of certain areas become subject to these changes either altogether or in patches, so that eventually the vessels become obstructed by thrombi. When this stage is reached, it is difficult to differentiate the thrombotic condition from other obstructive vasculatory diseases. It is, however, not only the vessels of the extremities that are affected; the blood vessels of all internal organs may also become subject to these changes (Hausner and Allen).

2. As to the *diagnosis*, there could be no doubt—according to the views generally held at present—that my cases definitely belonged to Buerger's group. The symptoms and course of the disease, the fact that young males were mainly affected (juvenile gangrene) did not permit of any doubt. Oscillometry and electrical thermometry (apart from clinical symptoms the decisive factors in the diagnosis of this condition) were applied in all our cases and definitely pointed toward this particular disturbance. To establish diagnosis arteriography is, in my opinion, unnecessary.

3. The *pathogenesis* of this disease is unclarified as yet. The literature is not very helpful, nor am I able to contribute to the solution of the problem. Buerger, as is well known, succeeded in transferring the disease from humans to animals by means of the pathologically changed tissue of the arteries and veins. In 1933 Maggi and Mazzochi showed that several implantations of suprarenal gland actually produced a condition very similar to Buerger's disease in animals. However, no very far-reaching deductions can be drawn from these facts.

The only impressive fact in the majority of my cases was that, to begin with, there was some inflammatory process of the legs, mainly acute or chronic thrombophlebitis, differing in degree. In other cases—post hoc or propter hoc—the earliest symptoms were suppuration of the nail bed (paronychia),

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preponderantly on the big toe, or eczema interdigitalis.

In all our patients, various metabolic examinations were repeatedly made: blood pressure, chemical blood tests, urine analyses, circulatory speed, blood volume. None of these methods, however, gave any indication as to the pathogenesis of the disturbance or as to which operative method would be advisable in the individual case.

4. We know that *medicinal therapy* is of great importance in Buerger's disease, in particular, physiotherapy, heat, alternating hot and cold baths, iontophoresis, short waves, venous hyperemia, suction and pressure therapy (cf. de Takacz), oscillating bed (Sanders); in addition, the vast number of spasmolytic drugs producing dilation of smaller and larger blood vessels. Silbert achieved particularly satisfactory results with intravenous injections of a 5 per cent sodium chloride solution; these proved highly beneficial in 83 per cent of his cases, provided a certain technic was adhered to.

It is impossible to go into detail as to all these methods. I only want to emphasize the fact that not one of our patients was operated upon before extensive internal therapy had been tried for a considerable length of time. In all our cases it proved to be a failure (see Case 9, who received as many as 5,600 injections of all kinds).

In those cases in which operation was performed at an earlier stage than might have seemed advisable, this was done because of (a) unbearable pain; (b) the occurrence of gangrene with septic symptoms.

5. The *clinical symptoms* of this disease present a pathologic-anatomic unity. Clinically, three definite groups have to be considered. This classification is also of importance in a prognostic as well as a therapeutic respect.

a. In the first group pain is the main factor and remains so during the course of the disease. This I term stage I. No inflammatory or gangrenous symptoms are present, although oscillometry as well as thermometry yield characteristic results. It may well be that only vascular spasms are active in producing the trouble in cases of this type.

b. Inflammation or ulcers which show a tendency to heal badly or not at all are the main feature in this group of cases (stage II). This may be due to slight obliteration of smaller vessels.

c. Gangrene, predominantly the moist kind, is the main symptom in stage III (stage of vascular occlusion).

As long as the statistics on operative results and on medicinal therapy reported by various authors are not based on this classification, it is very difficult to gauge the practicability of the various methods. It is, however, not only this factor that makes prognosis as well as therapy a matter of the utmost uncertainty. There is in addition the speed with which stage I may merge into stage II, or the length of time during which the case remains in the first or the second stage.

It is, indeed, surprising how long some patients suffer only from severe pain without any ulcer or gangrene occurring. In other cases there is a speedy transition from stage I to stage II or III. However, in my opinion, therapy has no bearing whatsoever on this occurrence (e.g., Cases 11 and 13).

6. As to the various *operative methods* which I have used, the following may be said:

a. *Arteriography* with various kinds of oily iodine solutions—although this is in contradiction to views of other authors—is a definite failure. In no case did I see improvement from this procedure.

b. In some cases which presented mainly inflammatory symptoms (stage II), I tried *intra-arterial injection* of dye solutions (mercurochrome, gentian-violet). This I did because of the possibility that there might be inflammation of small blood vessels which would respond favorably to this

method, which has been successfully carried out by Lucarelli, dos Santos, Goyanes, *et al.* in other conditions. None of the four cases treated in this way showed any improvement. Neither did the intra-arterial injection of procain, suggested by Leriche, give relief for more than a few hours at a time (Pereira).

c. Quenu and Silbert *cut the small nerves* of the legs in order to moderate the pain. Silbert used this method in combination with sodium chloride injections. Even though the anatomy of these small nerves is very complicated and they are not easily found, I tried this method in three cases, but with no success. In another case where I endeavored to influence the unbearable pain by incisions with the diathermy knife in various places on the leg, extending over a third of its circumference, no result was obtained.

d. *Periarterial sympathectomy* (Leriche, 1913) has been practically abandoned as a therapeutic procedure in Buerger's disease. In Europe I saw no permanent results yielded by it. Nor does the author of this method use it, except as a last resource where gangliectomy of the lumbar portion of the sympathetic nerve is contraindicated.

e. The operative methods usually applied in Buerger's disease are those suggested by Royle and Hunter in 1924, *removing the ganglia of the lumbar sympathetic* at various points. It is possible that this method has saved a good number of patients from amputation or rather from too early amputation. It is, however, naturally only the spastic element which is counteracted in this way, so that the field of indication is narrow. The theory of this operation was exhaustively discussed by Braüker at the International Surgical Congress in 1935. I should also like to refer the reader to publications by G. Pieri, Albert (Liége), A. Young, de Takacz and Craig (see the bibliography).

This operation—since it has in any case to be done bilaterally—must be carried out by the retroperitoneal approach in two stages or through the peritoneum in one. Recently Leriche pointed out that lumbar gangliectomy is more successful if carried out in the higher ganglia than in the lower ones. As to the various technical modifications, I refer the reader to the monograph of Lambret, Razemon and Decoux (*Technique de la chirurgie du sympathic*, Paris, 1939).

The figures given by various authors as to the success of the operative method vary between 30 and 70 per cent after three years of observation. The success with severe cases of Buerger's disease is, in my opinion, much lower. If it once becomes the rule to classify the disease under the headings suggested above, it will be apparent that even this method (high lumbar gangliectomy) yields little success. The later the follow-up examination, the more unsatisfactory the results.

It is necessary to have the tissues removed by operation examined histologically, if the result of the operation is to be correctly gauged. It is interesting to note that sometimes, even without histological verification as to the sympathetic nature of the removed nerve tissue, the result has been good (Roepke). This has also been my experience on one occasion.

According to Braüker and others, the success of the operation depends largely on the results of preoperative tests as to the reactibility of the blood vessels (Brown's test, paravertebral bloc, spinal anesthesia). According to my data, this premise is fulfilled only in the minority of cases.

f. Operating upon the *suprarenal glands* in connection with Buerger's disease is a method introduced by Oppel in 1921. He held the view that adrenal hyperfunction was responsible for the outbreak of this disturbance. Maggi and Mazzochi's experiments are also explainable on these lines. On the other hand, it has never been possi-

ble to prove the presence of vasoconstrictor substances in the blood of patients of this type, nor has a rise in blood pressure ever been found. According to this method, the left suprarenal gland is removed, a procedure which produces no disturbance in the organism of the patient.

One of Oppel's disciples, Nazaroff, recently reported on 262 cases operated upon in this way, of which 83 per cent gave positive results. It should, however, not be overlooked that he removed the higher sympathetic ganglia at the same time. We unfortunately have to record failures with this method too.

g. Some years ago I performed *total thyroidectomy* in a patient who suffered from angina pectoris but had in addition Buerger's disease *(Wien. klin. Wchnschr.*, 1936). In this case a large ulcer of the heel which had been present for months healed after operation, so that from that time I have always considered removing the thyroid gland in severe cases of Buerger's disease. In how many cases this was done, with what results, is shown by the case histories below.

The theory of this operation has been put forward by its initiators, the American authors Blumgart, Levin, Berlin, Weinstein, Darvis and others, who introduced this operative method in severe cardiac insufficiency and in angina pectoris.

Apart from the data given below as to the results of this operation, so far no other figures are available.

h. Bastai and Dogliotti performed *parathyroidectomy* in some cases of Buerger's disease, and their beneficial results were corroborated by several Italian authors. Two of their five cases were in good condition even after eighteen months. So far I have not tried this method in Buerger's disease.

i. The ultimate method—when all others have failed, or when sepsis or severe gangrene is present—is *amputation* of the leg. It happens again and again that after the lower amputation, the higher one has to follow. It is, therefore, advisable to perform high amputation in the first place, in order to save the patient the results of too sparing amputation.

No doubt it is owing to the recent operative methods described above that amputation is now used more rarely. However, it has by no means altogether disappeared. The fact that it had to be carried out in a comparatively high proportion of my cases is certainly due to their particular severity.

CASE REPORTS

Only features of actual importance are referred to in these case histories. The operations performed during the years 1939-40 were done by myself.

GROUP I

Cases which yielded initial results with lumbar gangliectomy include:

CASE 1.—R., male, aged 32, a worker, from Russia, had been ill for four years with phlebitis migrans, and had been treated with all sorts of medication for a considerable time.

State on admission: Stage I, right leg only.

Operation, April 9, 1939: Low lumbar gangliectomy on the right, using the retroperitoneal approach. Histologically the removed tissue showed no sympathetic fibers.

Follow-up examination, November, 1940: The patient was perfectly well, the leg almost normal, no pulse palpable.

CASE 2.—S., male, aged 38, a heavy smoker, a bricklayer, from Poland, had been ill for two years. Diagnosis was rheumatism; medicinal therapy was given. The patient was only able to walk 30 meters and had much pain.

State on admission: Stage I.

Operation, July 2, 1939: Bilateral low lumbar sympathetic gangliectomy (L3, L4). The arteriographic picture after operation gave evidence of a definitely better flow of blood through the vessels of the leg. During the postoperative phase paralytic ileus occurred which was improved by strychnine.

Follow-up examination, September, 1940: No trouble whatever. Even objectively, the disease may be considered as cured.

CASE 3.—J., male, aged 34, a heavy smoker, from Russia, had been ill for seven months. There was no inflammation, only claudicatio intermittens. Various attempts at medicinal therapy yielded no results.

State on admission: Unilateral stage I.

Operation, June 11, 1939: Transperitoneal bilateral

low lumbar gangliectomy. After operation, thrombophlebitis.

Follow-up examination, May, 1940: The claudication had disappeared; also objectively the condition was good.

CASE 4.—G., male, aged 31, a heavy smoker, from Austria, where he used to be a professional racing cyclist; he is now a motor mechanic. Through his profession he had received a number of wounds on both legs. Since 1934 he had had intermittent claudication on the left and could walk for only ten minutes at a time. The condition was improved by medicinal therapy. In 1936 claudication occurred on the right with thrombophlebitis (zinc-glue dressing), whereupon the condition improved up till 1939. Then claudication on the right recurred.

State on admission: Stage I on both sides.

Operation, July 15 and 29, 1940: Bilateral lumbar high gangliectomy in two stages from the retroperitoneal approach.

Follow-up examination, December, 1940: The patient was in a good condition subjectively as well as objectively.

CASE 5.—X., male, aged 36, not a smoker, from Rumania, works in the building trade. He had always been healthy up to 1938, when he felt pain in both the right and left legs after walking more than 50 meters. He received suction and pressure therapy, injections, etc., but with no relief.

State on admission: Stage I on both sides.

Operation, October 8, 1940: Bilateral transperitoneal gangliectomy (L3 and L4).

Follow-up examination, December, 1940: The patient was in good condition.

GROUP II

Group II contains the case histories of patients who were operated upon, at very short intervals in some cases, either because the previous operation had been resultless or because the symptoms had become even more marked. Further details on these cases will be published elsewhere.

CASE 6.—Cr., male, aged 29, an agricultural worker, from Poland, had been ill with thrombophlebitis since 1936. In 1937 Buerger's disease was diagnosed. Suction and pressure therapy and injections did not prove a particular success and he was unable to work. In October, 1938, sympathectomy (Leriche's method) was performed somewhere else, but with no result.

State on admission, August, 1939: Buerger's disease, stage I.

Operation, August 3, 1939: Almost the entire thyroid gland was removed, whereupon the pain subsided immediately.

Follow-up examination, November, 1940: The patient was in good condition objectively as well as subjectively and was able to work.

CASE 7.—G., aged 34, a heavy smoker, a car driver, had had a deep ulcer of the left big toe since 1936. Extensive medicinal therapy (typhoid vaccine, sodium chloride, padutin) gave no results.

First operation, October, 1936: Bilateral low gangliectomy. The operation had no desired effect. In December, 1936, the patient was readmitted to the hospital on account of pain and ulceration of the toes. The condition improved, but so slightly that the patient could not take up his work. In May, 1939, the left big toe had to be amputated. In July, 1939, the condition once more became worse.

State on admission, July, 1939: Buerger's disease, stage II. The amputation wound of the big toe was wide open. There were ulcers on the planta pedis, the toes were of livid color and rigid and the entire left leg showed discoloration.

Third operation, July 31, 1939: Total thyroidectomy. Soon after the operation the pain subsided and the ulcers healed. The old amputation wound of the big toe healed almost entirely. The patient walked nearly 5 km. a day and gained weight. This condition persisted up to October, 1940. Then a new ulcer on the left second toe and extensive ulceration of the left dorsum pedis appeared. He was readmitted to the hospital in November, 1940, with no symptoms of myxedema; basal metabolic rate was +5. Sodium chloride therapy was begun and is still being administered.

CASE 8.—W., aged 27, a bricklayer, from Rumania, fell ill in February, 1939. There was trauma of the left tibia with a small wound. In July, 1939, he had pain in both legs, diagnosed as due to flat feet. The left foot developed discoloration and severe pain. First admission to the hospital was in March, 1940. Medicinal therapy yielded no result, and an ulcer of the left little toe appeared.

State on admission: Buerger's disease, stage II.

First operation, April 18, 1940: Adrenalectomy on the left, combined with high lumbar gangliectomy. There was no improvement; the ulcer did not heal, gangrene of the heel developed and the pain became worse.

Second operation, May 30, 1940: Transperitoneal low bilateral gangliectomy (L2, L3) in one stage. Again there was no improvement, and the gangrenous area on the heel became larger.

Third operation, August 7, 1940: Total thyroidectomy. On October 18, the patient was dismissed with no pain, the gangrene having healed.

CASE 9.—N., aged 40, a very heavy smoker, from Austria. In 1934 he had felt pain in both legs, diagnosed as rheumatic in nature. Physiotherapy was tried. In 1935 he developed gangrene of the fourth and fifth toes of the left foot with much pain. Diagnosis was Buerger's disease.

First operation (in the presence of Danielopolu): Transperitoneal bilateral sympathectomy (the nerves were apparently not found).

Second operation, February, 1936: Sympathectomy, using the retroperitoneal approach on the right.

Third operation, May, 1936: Retroperitoneal sympathectomy on the left. The nerve was not found in this case either.

Fourth operation, December, 1936 (Vienna): The arteria femoralis was exposed and painted with a phenol solution (Doppler's method).

Fifth operation (performed by Leriche in December, 1936): Periarterial sympathectomy at the femoral artery.

In 1937 the condition had improved and the gangrene healed. Up to then the patient had had *5,600* in-

jections of various kinds (typhoid vaccine, padutin, papaverine, sodium nitrosum). In February, 1940, severe pain recurred and the patient was again unable to walk.

Sixth operation, March 31, 1940: Total thyroidectomy with no result.

Seventh operation, June 10, 1940: High lumbar sympathectomy on the left. The ganglia L1 and L2 were removed, and verified by histological examination, but there was no relief.

Eighth operation: The sensory cutaneous nerves of the leg were severed with the electrical knife. The patient now suffered from angina pectoris. In December, 1940, the pain was less, but the patient was not cured.

CASE 10.—S., aged 30, a driver, from Russia, had been ill since 1933. The condition was then diagnosed as Buerger's disease, and he received physiotherapy, pressure and suction treatment and injections—all with no result.

First operation, 1936: Sympathectomy (Leriche) with no result whatsoever.

Second operation, 1936, three months later: Low bilateral lumbar gangliectomy. For one year the condition was improved but later the patient was again unable to work.

State on admission: Stage I, intermittent claudication, discoloration of the left foot, no pulse.

Third operation, December 25, 1939: Adrenalectomy on the left with simultaneous high lumbar gangliectomy.

Follow-up examination, November, 1940: The condition was satisfactory, the patient able to work.

CASE 11.—W., aged 31, a worker, a heavy smoker, from Austria. His trouble began only four months before admission, and was then diagnosed as being due to flat feet. Two months later the diagnosis of Buerger's disease was established. He was treated with injections for four weeks (padutin, typhoid) but with no result.

State on admission: Only the left foot was affected. There was a large ulcer on the big toe; the rest of the toes and the back of the foot showed discoloration and rigidity. All other symptoms of Buerger's disease, stage II, were also present.

First operation, December 13, 1939: Retroperitoneal lumbar sympathectomy in two stages, first on the left, two weeks later on the right. The ulcer did not heal. On the contrary, gangrene on the left big toe supervened and the other toes also showed ulceration (stage III).

Second operation, February 5, 1940: Adrenalectomy on the left combined with high lumbar gangliectomy also on the left. After operation the condition grew definitely worse and the gangrenous area became larger. The patient was admitted to the hospital and sodium chloride therapy was tried. In March he was dismissed and treated in the outpatient department, but with no improvement. Neither novocain nor intra-arterial injections of mercurochrome and gentian-violet were successful. The gangrenous area extended to the anterior part of the foot.

Third operation, May 17, 1940: Amputatio cruris. Since, however, the amputation wound also developed gangrene, a fourth operation was undertaken on May 23, 1940 (amputatio femoris). A phlegmon formed at the site of operation and in the hip joint. On July 19, 1940, the patient died.

CASE 12.—M., aged 28, a butcher, a heavy smoker, from Poland, became ill with phlebitis in April, 1936. Even after the diagnosis of Buerger's disease had been established, medicinal therapy was resultless.

First operation, December 22, 1936: Low bilateral transperitoneal gangliectomy. The patient was in good condition up to the end of 1939, when pain again set in. The right big toe showed ulceration and he was again unable to work.

State on admission: Buerger's disease, stage II.

Second operation, January 28, 1940: Adrenalectomy on the right. An attempt was made to perform splanchnicectomy simultaneously, but it was not possible to find the splanchnic nerve. In the middle of February, 1940, the ulcer had healed and the pain disappeared. This satisfactory state persisted up to May. Then the pain reappeared and the old ulcer reopened.

Third operation, May 7, 1940: High lumbar gangliectomy on the right. This time the operation was successful, and histological examination verified the fact that it was actually nerve tissue that had been removed. All the same, the operation did not produce the desired results. The toe became gangrenous and the patient had much pain.

Fourth operation, October 10, 1940: Total thyroidectomy was performed, whereupon the pain immediately disappeared and the toes became normal, although with a certain amount of skin defect. The patient is still being watched.

CASE 13.—K., aged 38, a very heavy smoker, an engineer, from Austria. One year previously he had felt pain on walking (diagnosed as flat feet). Then a spontaneous fracture of the metatarsus occurred and was treated with a plaster of Paris dressing. Some months later ulceration of the left foot developed, and Buerger's disease was diagnosed. Medicinal therapy was given with no success. The first and second toes developed gangrene.

State on admission: Buerger's disease, stage III.

First operation, November 16, 1939: Low transperitoneal bilateral gangliectomy. After the operation the gangrene rapidly developed into the moist, smeary kind. Apparently the operation had only made the condition worse.

Second operation, November 26, 1939: Sympathectomy (Leriche) at the left femoral artery. The gangrene showed no sign of improvement, now extending over the whole back of the foot.

Third operation, December 4, 1939: Amputatio cruris. The wound showed suppuration and the gangrene crept over the leg.

Fourth operation, January 10, 1940: Amputatio femoris on the left. In March, 1940, pain set in in the right leg, too, oscillometric as well as thermometric findings being, however, normal. Silbert's therapy (saline injections) brought subjective relief. At present there is no pain on the right. On the left, the patient wears a prothesis.

CASE 14.—Sch., aged 35, a very heavy smoker, a Palestinean policeman, had been suffering from intermittent claudication (varicose veins) since 1927. In 1928 his left femoral vein was operated upon on account of this affection. In 1929 pain and later gangrene of the fourth and fifth toes of the left foot appeared, and the fifth toe had to be amputated. In 1930 gangrene appeared in the left leg.

First operation, December, 1933: High femoral amputation on the left. Subsequently the patient felt well

for twenty months. In 1936 a small ulcer of the right big toe appeared and later a phlegmon of the anterior part of the foot. Upon incision the phlegmon healed. From time to time, however, the wounds broke open again and showed a certain amount of secretion. In 1940 dry gangrene of the first to fifth toes developed on the right; on the back of the foot a big ulcer also appeared. Medicinal therapy brought no relief. Diagnosis was Buerger's disease, stage III.

Operation, October 7, 1940: High lumbar retroperitoneal gangliectomy. Sloughing only proceeded very slowly and no considerable improvement of the ulcer was recorded up to December, 1940. Medicinal therapy is being continued, since amputation of the second leg is naturally no simple matter.

SUMMARY

In 9 of 14 cases of Buerger's disease the most varied modern operative methods have proved disappointing. This is particularly true where stages II or III of Buerger's disease were present, also where the process was of a rapidly progressing character.

Two of the 9 patients were subjected to amputation after several other conservative operative methods had been tried; in 2 others, amputation will be carried out very shortly. One patient died with symptoms of sepsis developing on the basis of a progressing gangrene. In some cases the various types of lumbar gangliectomy, adrenalectomy or total thyroidectomy gave satisfactory results, medicinal therapy having failed.

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RÉSUMÉ

Traitement opératif de la maladie de Buerger

Dans 9 sur 19 cas de maladie de Buerger les plus differentes et modernes méthodes opératives wont pas été satisfaisantes. Ça est particulièrement vrai lorsque le II et III êtages de la maladie de Buerger sont presents, et aussi quand le procès était d'un charactère progressivement rapide.

Deux des 9 malades subirent amputation après que plusieures autres méthodes opératives conservatives avaient été éprouvées; dans deux autres cas l'amputation sera faite bien tôt. Un des malades mourut avec les symptômes de sepsis se dévéloppant sur une progressive gangrène. Dans certains cas les different types de ganglienectomie lumbale, adrenalectomie ou thyroïdectomie totale donnèrent des résultats satisfaisants, tandis que la thérapie médicale avait manquée.

ZUSAMMENFASSUNG

Die chirurgische Behandlung der Buerger'schen Erkrankung

In 9 von 14 Fällen von Buerger'scher Erkrankung haben sich die verschiedensten Formen moderner Chirurgie als unzufriedenstellend erwiesen. Das trifft besonders für die Fälle zu wo Stadium II und III der Buerger'schen Erkrankung vorzufinden waren und auch wo der Prozess einen sehr progressiven Charakter hatte.

Zwei von diesen 9 Patienten wurden einer Amputation unterzogen, nachdem einige andere konservative Opertionsmethodenversucht worden waren; in zwei weiteren Fällen wird in der nächsten Zeit eine

Amputation vorgenommen werden. Ein Patient starb mit Sepsissymptomen welche auf Grund eines fortschreitenden Gangräns auftraten. In einigen Fällen ergaben die verschiedenen Arten von lumbal Gangliectomie, Adrenalectomie oder totale Thyreoidectomie, befriedigende Resultate, nachdem die konservative Behandlung erfolglos war.

SUMARIO

El tratamiento quirúrgico de la enfermedad de Buerger

En 9 de 14 casos de la enfermedad de Buerger los mas variados y modernos métodos operatorios han fracazado. Esto es cierto en donde el grado II o III de la enfermedad de Buerger se presentó y tambien donde el proceso fue de caracteres progresivos y rápidos.

Dos de los 9 pacientes fueron sujetados a amputaciones despues de haber tratado de practicar otros diversos métodos conservativos, en otros dos, la amputación fue llevada a cabo inmediatamente. Un paciente murió con sintomas de sepsis teniendo origen en una gangrena progresiva. En algunos casos da resultados satisfactorios la gangliectomía lumbar, la adrenalectomía o la tiroidectomía total, cuando la terapeútica médica ha fallado.

RIASSUNTO

Trattamento operativo del morbo di Buerger

In 9 su 14 casi di morbo di Buerger i più vari metodi operativi moderni risultarono scoraggianti. Ciò è particolarmente vero nel II e III stadio della malattia, anche quando il processo era di un carattere rapidamente progressivo.

Due dei 9 pazienti furono sottoposti ad amputazione dopo che parecchi altri metodi conservativi furono provati. In 2 altri l'amputazione sarà fatta tra breve tempo. Un paziente morì con segni di sepsi sviluppantesi sulla base di una gangrena progressiva. In alcuni casi i vari tipi di ganglienectomia lombare, adrenalectomia o tiroidectomia totale diedero risultati soddisfacenti, dopo che terapia medica aveva fallito.

Perforated Appendicitis Due to Foreign Bodies

WITH SPECIAL REFERENCE TO THE DOMESTIC PIN

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THE ingestion of foreign bodies is a common incident, and because the vast majority of them are passed spontaneously through the rectum without undue complications, this subject is viewed with but little interest by the profession. Occasionally, however, particularly when dealing with sharp-edged or pointed objects, complications of a serious nature may arise which warrant immediate surgical intervention.

REVIEW OF THE LITERATURE

Carp in 1927 reported a series of ingested foreign bodies observed at the Presbyterian Hospital of New York City from 1925 to 1926. In all there were 31 occurrences. Of these, 19 were dull objects, of which 15, or 79 per cent, passed spontaneously in from twenty hours to four weeks. There were 12 sharp objects, and in 10 of these (83.3 per cent) the foreign body was passed spontaneously in from forty-eight hours to three weeks. From this short series we note that in 80 per cent of the cases the foreign body was expelled spontaneously from the rectum in from twenty hours to four weeks. Many of the bodies were evacuated in their original form, while some were acted upon by juices of the gastrointestinal tract in such a manner as to cause erosion and fragmentation. In glass objects there was found a rounding-off of sharp and jagged edges.

In its passage through the intestinal tract a foreign body is usually propelled with its blunt end forward. Exner, in experimenting with animals, found that the impingement of the sharp end of a foreign body upon the intestinal mucosa produced a local ischemia with a circumferential arrangement of elevated thickened mucosa, by which the pointed end of the body was repeatedly deflected, thereby effecting a change in its long axis, so that the blunt end pointed downward.

In their downward descent foreign bodies are most prone to become arrested at (1) the junction of the second and third portions of the duodenum; (2) the ileocecal junction; (3) the lumen of the vermiform appendix; (4) the junction of the cecum and the ascending colon and (5) the flexures and haustrations of the large bowel, including the ampulla of the rectum.

The first authentic case of a pin in the appendix, and incidentally the first authentic case of appendectomy performed upon the human, was reported by Amyand in 1735 (Claudius, Esq., F.R.S., quoted by Deaver, *Appendicitis, Diagnosis and Treatment,* ed. 3). Since then several instances have been reported in the literature. The most comprehensive studies of this subject were published by Fowler in 1912 and by Mahoney in 1921.

Cases have been reported where postoperative inspection of appendixes revealed the presence of unsuspected foreign bodies (Pike, Speese, Fowler, Bidwell). Bidwell estimated that a careful examination of appendixes would disclose an incidence of foreign bodies of about 20 per cent. He believes that in the majority of cases such foreign bodies would be found present in fecal concretions so commonly present

within the appendix. It is his opinion that such bodies usually form the nucleus of concretions by virtue of their ability to excite excessive secretion of mucus, which is deposited upon them. It is this mucus which permits the layers of feces to become adherent to the surface of the foreign body. This writer, as well as Deaver, also maintains that a foreign body by itself is not prone to set up irritation and is incapable of producing acute inflammation unless it happens to be the nucleus of a fecal concretion.

Fowler, on the other hand, is somewhat skeptical about the role played by foreign bodies, particularly seeds, in the formation of appendicular fecal concretions. Some writers believe that a foreign body is incapable of entering a normal appendix. As regards the actual incidence of foreign bodies found in cases of appendicitis, Fowler estimates it as 0.2 per cent in a series of 2,000 cases. Murphy, on the other hand, found foreign bodies in 2 per cent of 2,000 cases, while Mitchell noted an incidence of 7 per cent in a series of 1,400 cases. An even higher incidence, namely 12 per cent, was reported by Fitz and Matterstock. Yet Heineck, in a series of 3,750 routine autopsies at the Cook County Hospital, found only two cases presenting foreign bodies.

THE DOMESTIC PIN

According to Fowler, the common domestic pin is the most frequently encountered foreign body in the appendix, and the one constituting the greatest menace. Yet a perusal of the literature shows a relative paucity in the number of reported cases of a pin in the appendix. Kelly, for example, found one instance in a series of 460 cases. Ewing, Schultze and Wood (quoted by Fowler) in their vast postmortem experience have observed no such cases. Barnes, in a study of 94 cases of foreign bodies in the appendix collected from the literature, found that 52 per cent of them were pins. Mahoney, out of a series of 74 cases of true foreign bodies collected from the literature, found that pins were the causative agent in 40, or 55.5 per cent.

Contrary to the general opinion that pins would be found most frequently in the appendixes of women, a review of the literature indicates that most of the pin cases occurred in men. According to DeForrest, pins are four times more common in men than in women, while Mitchell and Mahoney maintain that men are twice as frequently affected as women.

The pin usually enters the lumen of the appendix head down. When found, its most frequent position is parallel to the long axis of the appendix, with its head pointing toward the tip of the appendix. Occasionally the pin has been found to lie transversely across the lumen of the appendix. The pin may be found free of any concretions or deposits, or it may constitute the nucleus of a fecalith. At other times it is corroded and brittle, or even fragmented. In the event of its being part of a fecal concretion, it may be completely or only partially covered. In the latter instance, it is the head rather than the point of the pin which is most frequently covered. The character of the encrustation also varies from soft to hard feces.

Although a pin in the appendix is frequently complicated by prompt perforation, this is by no means always the case, since in many instances the actual cause of the perforation is not the foreign body. In cases where the head of the pin is encrusted, it has frequently been found that the point had penetrated the wall of the appendix. In a few cases it was the head which was found to have ulcerated through the wall of the appendix. Rarely have two points of perforation been found, one caused by ulceration of the head of the pin and the other by penetration of its point. Two cases have been reported in which two pins were found in the appendix (Hirst, McBurney).

In three cases the point of the pin was found embedded in the wall of the appendix without penetrating it (Joffroy, McPhedran and Caven, Morriata).

In a few instances there was no evidence of involvement of the serosal surface of the appendixes indicating the presence of a foreign body in their lumina. Perforation occurs either by ulceration or by direct penetration of the pin through the wall of the appendix, the usual site of perforation being the base or the midportion. The tip of the appendix has rarely been found to be the seat of the perforation. Cases have been reported of pins which have passed through the walls of appendixes, later migrating into neighboring viscera, such as the urethra by way of the bladder (Keen). Fowler was able to collect four cases in which the appendix with its retained pin was found in the sac of a hernia. In one of these the pin had migrated from a gangrenous appendix situated in a hernial sac, and had become impaled upon the dartos of the scrotum (Roberts). In a few instances pins were extruded in the discharge from an appendical abscess, or were the cause of persistent sinuses following appendectomy, or were found situated in the stump of an appendix. In cases where adhesions immediately formed at the site of perforation, general peritonitis or abscess failed to ensue.

As regards the symptomatology accompanying this condition, it might be stated that it is extremely variable. Rarely is this condition diagnosed prior to operation. Symptoms of some sort are present in the majority of cases, lasting from a few hours to several years. Most frequently symptoms are of long standing and it is the acute exacerbation which leads to operative intervention. Mahoney estimates that out of 40 recorded cases, the attacks were acute in 24 and chronic in 14. In many cases symptoms are of a mild nature, usually being characterized by slight pain in the right lower quadrant of the abdomen. In the cases of Bell and Morriata pins remained dormant in the appendix for long periods and were detected only after acute exacerbations following a blow upon the abdomen.

When foreign bodies are known to have been swallowed, it is the opinion of Jackson and Jackson that the patients should be watched fluoroscopically during progress of the objects through the intestinal tract. Only in the event that such a body becomes arrested and remains localized in one place for as long as four days do these authors advise surgical intervention.

As to mortality, Mahoney showed that out of 38 cases in which the end results were mentioned, 21 died, an incidence of 55.2 per cent. Prior to 1895 the mortality was 72.2 per cent, while after that date up to 1917 it dropped to 40 per cent.

CASE REPORTS

CASE No. 1.—F.S., female, aged 51, was admitted to the hospital on May 24, 1928, and succumbed on June 1, 1928. At 3 P.M. on the day before admission she was seized with sharp, knife-like pain in the right lower quadrant of the abdomen. At times the pain radiated to the right loin. There was no history of nausea or vomiting. Pulse 72. Temperature 98.6 F. Blood count: leukocytes 11,000; polymorphonuclears 72; lymphocytes 38. On the day of admission the temperature rose to 100 F. and the pulse to 112. The pain remained sharp and persistent.

Physical examination (H.F.) disclosed tenderness with positive rebound over McBurney's point. The heart sounds were of poor quality. There was dullness over the right base with rales at both bases. Preoperative diagnosis was acute abdomen, twisted ovarian cyst, cardiac insufficiency.

Operation disclosed an appendix which was distended with pus and contained a large fecal concretion. The appendix ruptured during its extirpation. On pathological examination the serosal coat of the appendix was found injected, particularly over its proximal portion. In this region all the other layers of the appendical wall disclosed evidence of extensive inflammation. The lumen was filled with a large fecalith in which an ordinary pin was embedded. The head of the pin pointed toward the tip of the appendix.

CASE No. 2.—C.F., female, aged 26, single, a seamstress, was first seen March 15, 1940. While at work on February 12, 1940, she accidentally swallowed a pin which she carried in her mouth. Immediately after swallowing it she felt pain in her throat and consulted a physician, who attempted to remove the pin from her throat without success. She was then referred to a hospital, where X-rays of the chest and abdomen failed to disclose the presence of the pin.

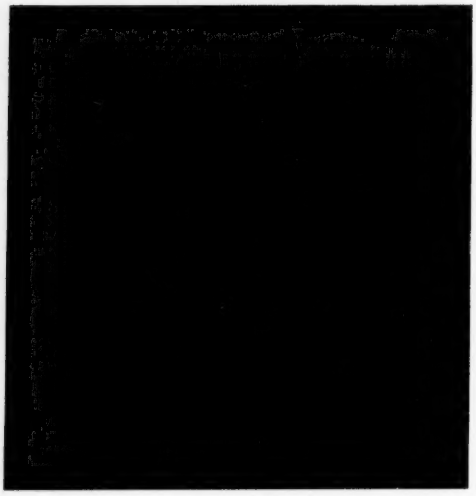

Fig. 1. Flat X-ray of the pelvis indicating the position of the pin.

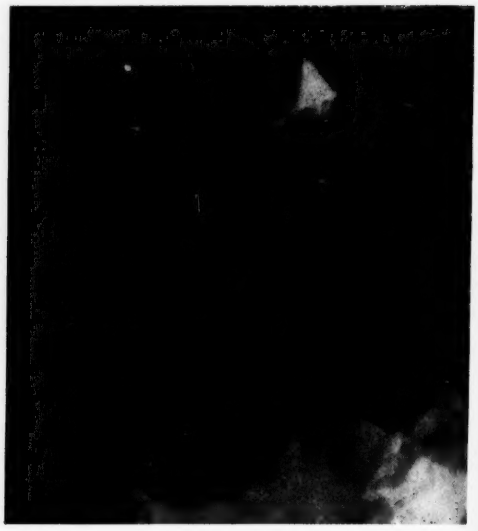

Fig. 2. X-ray showing the position of the pin with relation to the appendix. Note particularly the head of the pin pointing downward toward the tip of the appendix.

For nine days she continued to have pain in the throat. After chewing on gum she felt that the pin had moved into a different position and the pain in the throat disappeared. The next day, however, she developed pain in the stomach; this began immediately after lunch, continued for several hours and then disappeared. Two days later she again developed abdominal pain, this time of short duration. On February 25, one day later, at 10 P.M. she experienced severe pain in the abdomen which lasted until 2 o'clock the next morning. A stool passed during this interval was blood-stained. The following morning the pain recurred. It became localized to the right lower quadrant, radiating to the right thigh and to the rectum.

On March 11 a scout film of the abdomen, followed by films taken after the ingestion of a small amount of barium, disclosed the pin lying in the vicinity of the vermiform appendix (Figs. 1 and 2). On March 15 she was seen in consultation (J.A.L.). Physical examination was essentially negative save for acute tenderness over McBurney's point and congenital dislocation of the right hip. The diagnosis was acute perforated appendicitis due to a pin. Operation was performed the next morning, March 16, 1940 (J.A.L.).

Fig. 3. Arrow showing the distal third of the pointed end of the pin protruding from the antimesenteric border of the appendix.

Through a three-inch right Kammerer incision the peritoneum was opened, disclosing an elongated appendix with its distal half firmly adherent to the right ovary. There was no evidence of local or generalized peritoneal involvement. After separating the appendix from the right ovary, it was noted that the pin was lying head downward, facing the tip of the appendix, while the point had penetrated the wall of the appendix opposite the mesenteric attachment (Fig. 3) and was embedded deeply in the ovary—like a pin stuck into a pin cushion. There were no protective adhesions around the appendix save for the firm attachment of the ovary to it. After withdrawing the point of the pin, the ovary was found perfectly normal with the exception of a small perforation at the point where the pin had penetrated. The pin was rusty but not corroded and was not involved in a fecal concretion. A typical appendicectomy was performed, but the right ovary was not disturbed. The wound was closed in layers without drainage. Following an uneventful convalescence, the wound healed per primam. The patient was discharged from the hospital on March 26.

The pathological report by Dr. A. Schifrin was as follows:

Macroscopic.—"Specimen consists of an appendix measuring 7 by 0.2 cm. at tip and 0.8 cm. at the proximal and middle third. At the latter area is the projection of a pointed end of a straight pin at a 30° angle to the wall of the middle third. The remainder of the pin felt through the wall is parallel to the wall at the proximal third. The perforation is almost at the antimesenteric border. It penetrates through the serosa. The vessels are markedly injected. Very little reaction of the serosa is seen distal to this site. There

are no periappendical adhesions. The lumen is not dilated and measures 0.2 cm. and contains fecal material but no pus. The entire pin is discolored and rusty. No corroding of the pin is seen on scratching the discoloration."

Microscopic.—"(Sections taken from proximal and distal areas of appendix since specimen is being preserved.) The lumen contains debris and occasional round cells and polys. The mucosal epithelium is intact. The mucosal stroma contains proliferated stromal cells, round cells and scattered polynuclear leukocytes, mainly eosinophiles. The lymph follicles are small but hyperplastic. The serosal layer shows prominent hyperemia. There is no diffuse appendicitis."

Diagnosis.—"Foreign body perforation of appendix by a straight pin."

SUMMARY

While pins in the appendix constitute the largest number of foreign bodies found in the appendix (over 50 per cent), the incidence of this condition as judged by a perusal of the literature is relatively small. The majority of foreign bodies found in the appendix are surrounded by fecal matter constituting fecal concretions. Opinions differ as to the possibility of a foreign body per se producing acute inflammation of the appendix unless it is involved in a fecal concretion. The usual site of perforation is the base or midportion of the appendix.

While symptoms of some sort are present in the majority of cases, lasting from a few hours to several years, rarely has the diagnosis been made prior to operation. In those patients known to have swallowed pins, it is recommended that frequent X-rays be taken and surgical intervention instituted if the foreign body remains localized in one place for as long as four days.

Two cases of pins in the appendix are presented.

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RÉSUMÉ

Appendicite perforée due à corps étrangers

Tandis que les épingles dans l'appendice constituent le nombre le plus grand de corps étrangers trouvés ici (au dessus du 50%), la présence de cette condition à juger par une revue de la littérature est rélativement petite. Le plus grand nombre de corps étrangers qu'on trouve dans l'appendice sont entourés par matière fécale que constitue des concretions fécales. Les opinions diffèrent pour ce que regarde la possibilité d'un corp étranger qui produit lui seule une inflammation aiguë de l'appendice sans être entouré par une concretion fécale. Le lieu usuel de perforation est la base ou la portion de milieu de l'appendice.

Tandis que des symptômes de quelque gendre sont présents dans la grande partie des cas, qui durent de peu heures à plusieurs années, rarement le diagnostique a été fait avant l'opération. Dans les malades qu'on sait ils ont avalé des épingles, on recommande de faire de fréquentes radiographies et de opérer. Deux cas d'épingles dans l'appendice sont presentés.

ZUSAMMENFASSUNG

Perforierte Appendicitis als Folge von Fremdkörpern

Während die grösste Zahl der Fremdkörper im Appendix Nadeln sind, (über 50 per cent), ist das Auftreten dieses Zustandes, wie bei einer Durchsicht der Literatur hervorgeht, relativ gering. Die Mehrzahl der Fremdkörper welche im Appendix gefunden werden sind von fecalen Massen umgeben welche fecale Concretionen bilden. Es gehen die Meinungen auseinander über die Möglichkeit, dass ein Fremdkörper an sich eine akute Entzündung des Appendix hervor ruft wenn er nicht in fecale Concretion eingeschlossen ist. Die gewöhnliche Stelle der Perforation ist die Basis oder der mittlere Anteil des Appendix.

Während Symptome irgendwelcher Art in der Mehrzahl der Fälle vorhanden sind, welche von einigen Stunden bis zu vielen Jahren andauern können, so ist doch selten die Diagnose vor der Operation gemacht worden. Bei jenen Patienten bei denen bekannt ist, dass Nadeln verschluckt wurden, wird häufige Röntgenuntersuchung empfohlen und ein chirurgischer Eingriff angeraten, falls der Fremdkörper für die Dauer von vier Tagen an einem Platze lokalisiert bleibt.

Zwei Fälle von Nadeln im Appendix werden vorgestellt.

SUMARIO

Apendicitis perforadas debidas a cuerpos extraños

Aun cuando los alfileres constituyen el mayor número de cuerpos extraños encontrados en el apéndice, (más del 50 por ciento) el contingente de esta condición es relativamente pequeño cuando se revisa la literatura. La mayoría de los cuerpos extraños encontrados en el apéndice están rodeados de materia fecal constituyendo concreciones fecales. Las operaciones difieren en cuanto a la posibilidad de que el cuerpo extraño por sí mismo produzca inflamación aguda del apéndice a menos que esté envuelto en concreciones fecales. El sitio usual de la perforación es la base o porción media del apéndice.

Aun cuando se presentan algunos síntomas en la mayoría de los casos, durando algunas horas o varios años, rarmente se ha hecho el diagnóstico antes de la operación. En aquellos pacientes en los cuales hay antecedentes de haber deglutido alfileres, se recomienda que se tomen frecuentes radiografías y que se instituya la intervención quirúrgica si el cuerpo extraño permanece localizado en un sitio durante cuatro días.

Se reportan dos casos de alfileres en el apéndice.

RIASSUNTO

Appendicite perforata dovuta a corpi estranei

Mentre gli spilli nell'appendice costituiscono il numero maggiore di corpi estranei ivi trovati (sopra al 50%), la presenza di questa condizione a giudicare da una rivista della letteratura è relativamente piccola. La maggior parte dei corpi estranei che si trovano nell'appendice sono circondati da materiale fecale che costituisce concrezioni fecali. Le opinioni differiscono per quanto riguarda la possibilità di un corpo estraneo che produca da se solo un'infiammazione acuta dell'appendice senza essere avvolto in una concrezione fecale. Il luogo solito di perforazione è la base o la porzione di mezzo dell'appendice.

Mentre dei sintomi di qualche genere sono presenti nella maggioranza dei casi, che durano da poche ore a parecchi anni, di rado la diagnosi è stata fatta prima dell'operazione. In quei pazienti che si sa hanno ingoiato spilli, si raccomanda di fare frequenti radiografie e di eseguire intervento chirurgico se il corpo estraneo rimane localizzato in situ per 4 giorni. Vengono presentati due casi di spilli nell'appendice.

Congenital Tibiofibular Synosteosis*

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MOST congenital malformations of the lower extremity have an analogue in the upper extremity, and vice versa, even though the frequency of their occurrence varies considerably. However, for the radioulnar synosteosis no similar deformity seems to be known in the lower extremity. Thus, the following short description of a congenital tibiofibular fusion at the upper end may be justified.

This case, treated several years ago, remains the only one encountered among the wealth of material observed during the past twenty years. Also, no evidence of such a deformity could be found in the literature, although no claim is made to a complete perusal of the literature.

The case is that of a perfectly healthy 17-year-old white male, who came under observation because of marked bilateral knock-knee. While this condition caused no symptoms, the patient objected to it for cosmetic reasons. His past history, as well as that of his family, offered nothing remarkable. As long as he was able to recall, he had had slight knock-knees, though they had become more marked during recent years. At no time did any symptoms arise which were referable to the lower extremities.

Examination revealed marked bowing of the lateral aspect of the legs below the knees, also a bilateral knock-knee of considerable degree. The knee joints were freely movable and painless. On the spot where the head of the fibula is usually felt, only the lateral wall of the tibia could be discerned. About 3 inches below the joint space there was palpable a bony resistance which apparently represented a laterally curved fibula. The ankle and tarsal joints were entirely normal, as were the external and internal malleoli.

ROENTGENOGRAM showing congenital tibiofibular synosteosis.

This peculiar picture was rendered lucid by the unexpected radiologic findings. It was shown that the heads of both fibulas were in bony union with the tibias. The fibulas themselves took an arched lateral course and assumed their normal form parallel to the shin bone only in the lower third, forming an entirely normal ankle joint. The point of synosteosis was about the middle of the upper third of the shaft of the tibia. The structure of the lateral

*From the Orthopedic Service of Bellevue Hospital, Arthur Krida, M.D., Director.

tibial cortex was considerably denser than normal; about half of the fibular head was incorporated in it. No tibiofibular fusion existed at the ankle.

Since even the normal tibiofibular junction is of practically no moment, it was obvious that its fusion caused no symptoms and required no treatment. The knock-knee was corrected by supracondylar osteotomy of the femora.

Whether the genu valgum was an incidental finding or an obligatory part of the deformity cannot be determined on the basis of a single observation. It may be that the lateral fascial apparatus of the knee, because of its attachment to the head of the fibula, became increasingly tense during the growth period, and thus pulled the joint into valgus position.

Of interest is the bowing of the fibula. It can be concluded that the proximal epiphyseal plate functioned to some extent and pushed the bone aside inasmuch as it was unable to grow upward.

It may be worth noting that in mammals the anatomical relationship of tibia and fibula is subject to wide variations. The fibula, while never completely missing, has a tendency to rudimentary development (reduction). In certain species a short lateral malleolus is all that represents the fibula. In others, the lower end of the fibula is fused to the shaft of the tibia. In some rodents and insectivora, it is the upper end of the fibula which is in bony union with the shin bone.

SUMMARY

A case is reported of a bilateral congenital tibiofibular synosteosis, a deformity met by the author only once and not found described in the literature. Clinically, there was a knock-knee of considerable degree. The tibiofibular fusion itself produced no symptoms.

RÉSUMÉ

Sinostose tibiofibulaire congenitale

Un cas de sinostose tibiofibulaire congenitale bilaterale est rapporté; c'est une deformité rencontré par les auteurs seulement une fois et pas trouvé décrite dans la litterature. Cliniquement un genou valgum très considerable était present. La fusion tibiofibulaire ne produisait pas des symptômes par elle même.

ZUSAMMENFASSUNG

Angeborene tibiofibuläre Synostosis

Es wird ein Fall von bilateraler, angeborener, tibiofibularer Synostosis beschrieben, eine Missbildung welche nur einmal vom Autor angetroffen, und nicht in der Literatur gefunden wurde. Klinisch fand sich ein ziemlicher Grad von genu valgum. Die tibiofibulare Fusion an sich verursachte keine Symptome.

SUMARIO

Sinosteosis tibio-peroneal congénita

Se cita el caso de una sinosteosis tibioperoneal congénita bilateral, en la cual el autor halló por primera vez una deformidad que no se encuentra descrita en la literatura. Clinicamente existiá una curvatura interna de los miembros inferiores, muy marcada. La fusión tibio-peroneal en sí no producía síntomas.

RIASSUNTO

Sinostosi tibiofibulare congenita

È riportato un caso di sinostosi tibiofibulare congenita bilaterale, una deformità incontrata dagli autori solo una volta e non trovata descritta nella letteratura. Clinicamente c'era un ginocchio valgo di alto grado. La fusione tibiofibulare per se stessa non produceva sintomi.

Cancer of the Stomach in Children and Young Adults

A REVIEW OF THE LITERATURE

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HISTORICAL DATA

TUMORS and ulcers of the stomach have been recognized for many centuries. Roger (Ruggiero Frugardi) of Palermo (*Practica*, circa 1170 A.D.) knew of cancer. Guy de Chauliac (1300-1370?), most eminent surgeon of the fourteenth century, believed in cutting out cancer with the knife at an early stage. He employed actual cautery in the fungous type of cancer (*Inventarium et Collectorium, Chirurgia Magna*, 1363).

The Caliph al-Mansur was afflicted with a stomach disease which baffled his physicians. At their advice he summoned the Nestorian Jurjus ibn Bakhtishū', dean of the Jundisapur medical school, who, because of his success, was made dean of the physicians of Bagdad. The Caliph's stomach ailment was undoubtedly either cancer or ulcer (Amin A-Khairallah,[185] 1941).

Celsus (26 B.C. to 30 A.D.?), Aëtius Amidenus (502-575 A.D.), Avicenna (980-1036), Avenzoar, Benivieni, Cardan, Fabricus, Rhodius, Capivaccius, Laurentius Phryesen (Fries, d. circa 1532), Rembert Dodonaeus (1517-1580), Marcellus Donatus (1586), Felix Plater (1534-1614), J. Schenck (1530-1598), P. Forestus (1522-1597), G. B. Morgagni (1682-1771) and many other writers of the seventeenth and eighteenth centuries observed cases of ulcerative and neoplastic disease of the stomach and intestines.

Of interest are the works of Constantinus Africanus of Carthage (1020-1087), *De Stomachi Affectionibus Naturalibus et Praeter Naturam*, in his *Opera;* H. Petrus, *De Morborum Curatione* (Basel, 1536); J. Heurnius (1543-1601); J. Crato (1516-1586); J. Varandaeus (1562?-1617), *Tractatus de Morbis Ventriculi* (Lugduni, 1620); A. Fumanellus, *De Ventriculi Affectibus Praeter Naturam* (Zurich, 1557); John Abercrombie (1780-1844); Cruveilhier (1791-1874); and the reports of Rokitansky (1804-1878), R. Virchow (1821-1902), J. Cohnheim (1839-1884) and T. Billroth (1829-1894), the pioneer of visceral surgery, also credited with the first successful resection of the pylorus for cancer (1863).

REPORTS OF CANCER IN THE YOUNG

Until quite recently cancer of the stomach and intestines was considered to be a disease of advanced years, or at least to be limited chiefly to the fifth, sixth and seventh decades. Because of this fixed impression, *diagnoses of malignancy of the stomach and intestines in the young have no doubt been delayed or even entirely overlooked in a considerable number of cases.*

R. P. Sullivan[148] in 1924 collected 21 cases of gastric cancer in young patients and added 1 of his own. Osler and McCrae[111] in 1909 found records in the literature of only 6 cases of cancer of the stomach in patients under the age of ten. Four of these cases were infants under six weeks. Eusterman and Bueerman found 14 cases under thirty years of age among 1,000 patients. Lahey, Swinton and Peelen had 1

patient under thirty years among 195 cases. Minnes and Geschickter, among 541 cases, had 18 under thirty.

This report is suggested by a personal observation in a boy about 14 years of age, seen by the writer early in his professional career, in the fall of 1909; also by reports of the following authors: articles by R. P. Sullivan;[148] the Inaugural Dissertation by Czeslaw Johann Kostrzewski;[78] the early reports by Thomas Williamson ("Case of Scirrhus of the Stomach, Probably Congenital, *London & Edin. J. Med. Sc.* (Jan. 1), 1841, pp. 23-24); James H. Hutchinson;[67] C. J. Cullingworth (*Brit. M. J.* 2:253 (Aug. 25), 1877); Alfred Scheffer;[136] Arnold Reinbrecht;[129] Josef Kaulich;[71] Widerhofer;[160] A. Pillon;[122] Marc Mathieu;[102] and A. Schmincke.[139]

AUTHOR'S CASE REPORT

The patient, a very sick boy 14 years of age, had a history of pain in the upper abdomen, vomiting, rapid loss of weight, anorexia and anemia. The child had been sick with "stomach trouble" and attacks of "indigestion" since the early summer of 1909 and had been growing rapidly worse. On careful examination a palpable mass in the region of the stomach was easily felt. There was also evidence of metastases to the liver and elsewhere in the abdomen. The left supraclavicular lymph node was enlarged (Troisier[151]). Exploratory operation was refused, as were gastric studies also.

Because of the lack of more accurate information, I cannot state, of course, that this was definitely a case of primary malignancy of the stomach. However, because the chief symptoms throughout the course of the illness were those of some disease of the stomach, and because of the rapid or "galloping" (Mathieu,[102] Osler and McCrae,[111] H. Schlesinger[137]) progress of the disease, one might with some degree of justification consider this a case of malignancy of the stomach with metastases.

At the time I found the definite mass in the region of the stomach, I expressed the opinion that this was a rare instance of a tumor of the stomach in a child, with metastatic involvement of other organs.

The child died only a short time after I first examined him. There was no necropsy. Because there was no proof to satisfy me that I was entirely correct, I hesitated to make any report on this most interesting case.

REPORTS OF MALIGNANCY

In a fairly careful review of the available medical literature of the world, I found a considerable number (approximately 350 recorded cases) of instances of primary malignancy of the stomach and intestines in children and young adults none of whom were over 26 years of age.

I cite here some interesting case reports of *malignancy of the stomach* in children and young adults by the following: Dittrich[36] (1846, 1848), O. Kübel[84] (1848), H. Lebert[192] (1851), A. Pillon[122] (1856), H. Widerhofer[160] (1859), R. Virchow (1821-1902), J. B. S. Jackson[68] (1864), Werner[214] (1869), Luton[195] (1871), P. Riechert[130] (1872), L. Landouzy[190] (1873), J. Duzan (1876), W. Leube[89] (1876), H. Banga[172] (1878), Debrunner (1883), C. Picot (1883), Norman Moore (1884), J. Radt[125] (1885), W. H. Welch[213] (1885), R. Scholz[141] (1886), Kühn (1886), R. Durzea[40] (1887), H. Koester[77] (1887), P. Pennato[202] (1887), J. Laurencin[191] (1888), Debové (1889), H. M. Fisher[42] (1890), Ashby and Wright (1892), Wilde[162] (1892), Hoffmann (1893), H. Muth (1894), J. Boas (1896, 1897), Glynn[181] (1896), E. Hirtz and E. Lesné[62] (1896), Lindner and Kuttner (1896), de la Camp[27] (1897), G. Dock[178] (1897), W. Roger Williams[216] (1897), A. Schiff[207] (1898), W. Osler and T. McCrae[111] (1900), L. Rütimeyer (1900), A. Schmincke[139] (1901), G. Anning[2] (1902), Kitamura[187] (1903), W. K. Mlodzejewski[107] (1903), Treupel (1903), Felix Huch[63] (1904), K. Oyama[201] (1904), Rohde[134] (1904), E. Bernoulli[9] (1907), G. S. Strathy[210] (1907), Ghon[47] (1908), R. B. Ness and J. H. Teacher (1908), W. Osler and T. McCrae[111] (1909), Albert Albu[1], J. R. C. Canney[175] (1911), E. Solms[146] (1911), Urrutia[153] (1911), O. Peiper[116] (1913), F. Smithies[145] (1914), A. S. Warthin[155] (1915), H. Schlesinger[137] (1916), Rudolf Schmidt[138] (1916), W. B. Cosens[31] (1917), F. Dévé[35] (1919), Eugen Lilienthal[91] (1920), J. Schrijver[149] (1920), D. A. Laird[85] (1921), Alberto Galindez[45] (1922), M. Golob[57] (1923), P. Peugniez[117] (1924), E. Begtrup[8] (1925), F. A. Schalij[135] (1925), J. R. Head[61] (1926), H. H. Kretzler[83] (1926), V. Knapp[76] (1927),

H. G. Mogena[108] (1927), B. Bernstein[10] (1929), L. Blagdon[16] (1929), J. Quenu *et al.*[124] (1929), M. M. Mintz[105] (1930), Helmholz (1931), R. Morian[109] (1931), C. S. Hagerty and S. Gibson[59] (1932), H. Kirchhoff[75] (1932), F. E. Muller[110] (1932), Pantzer[113] (1932), C. Beccari[7] (1933), R. A. K. Harper[60] (1933), M. K. King[74] (1933), G. Levene and Wheatley[90] (1933), E. L. Bishop[15] (1934), R. L. Patterson and R. E. Gross[114] (1934), W. J. MacFarland[94] (1935), L. Rimbaud *et al.*[132] (1935), H. Bade[4] (1936), W. J. Bruckner[20] (1936), L. Bouchut *et al.*[18] (1939), R. B. Phillips[120] (1939), M. Takenouti[149] (1939), A. Marble[99] (Jan., 1941), and others.

There have been a number of cases recorded of *sarcoma of the stomach* in children and young adults. Among these cases may be listed the following: Wilk's (1859), case of an 18 year old girl; J. W. Legg (1873), a 17 year old girl; H. Thursfield (1900), a boy 3 years, 9 months old; Norman Dalton (1906), a boy 15 years old with a small round-cell sarcoma of the stomach; J. Finlayson[180] (1899), a 3½ year old child; B. Ward-Shaw (1916), a man of 25 years; Scudder (spindle-cell sarcoma of the stomach in a man of 29 years, *Ann. Surg.* 58: 145, 288, 1913); J. N. Morris (1921), a case of primary round-cell sarcoma of the stomach in a woman 33 years old; Lapeyre (1920), 2 cases of primary sarcoma of the rectum in boys 11 and 15 years; and Sidney Coupland (1876), a case of a woman 24 years of age with lymphadenoma of the stomach and extensive metastasis.

James Ewing of New York states that gastric carcinoma occurring at an early age is usually of rapid course, and adenocarcinoma is the usual type of growth in young subjects. He cites a young man of 27 years with adenocarcinoma of the pylorus and multiple metastases over the peritoneum (*Neoplastic Diseases*, ed. 3, Philadelphia, Saunders & Co., 1928, p. 699). Ewing and W. R. Williams (1908) both refer to the occurrence of gastric cancer in Napoleon I and his family.*

There are a number of recorded instances of *cancer of the jejunum and ileum, colon, sigmoid and rectum* in young patients. Duncan's[39] (1896) patient was a boy 3½ years of age, who died of cancer of the small gut with metastases to the liver, kidneys and lungs. Lebon[87] (1894) reports a girl 11½ years old, who died of cancer of the ileum, with metastases to the liver. Spanton's case of medullary cancer of the ileum with metastases to the kidneys was a girl 12 years of age (*Med. Times and Gaz.* 1:278, 1878).

Cases of *cancer of the colon* were reported by Ahlfeld, M. Bürger[23] (1893, 2 boys), Robson (1895, a 14 year old girl), and Ruczynski (1904, a 13 year old boy).

Several cases of *cancer of the sigmoid* were reported by Sterner (1865, a 9 year old boy), Leijer (1872, a 19 year old girl), Dubar (1879, a boy 19 years of age), Wilde[162] (1892, a 15 year old boy), Paltauf (1900, a girl 12 years of age), Zuppinger (1900, a girl 12 years of age), and Marsh[100] (1902, a 15 year old boy).

Cases of *cancer of the rectum* were reported by Heuck (1882, an 18 year old student), Schoening[140] (1885, 2 girls 17 years old), Kruger (1889, a 19 year old girl), Stern (1892, an 11 year old girl), Czerny[32] (1896, a 13 year old boy), de la Camp[27] (1897, a boy 16 years old), Funke (1897, a boy 16 and a girl 17 years of age), Wendel (1899, a boy 16 years of age), Schneider (1900, a boy 14 and a girl 15 years of age), Bethe[12] (1901, an 11 year old boy), Luck (1904, a 15 year old girl), Rohde[134] (1904, a 19 year old boy), Milne (1905, a 12 year old boy), and others.

*Not only did Napoleon Bonaparte himself die of cancer of the stomach, but also his father, Charles Marie of Corsica (1746-1785); his brother, Lucien, Prince of Canino (1775-1840), a poet; his sister, Marie Pauline, Princess Borghese (1780-1825); and his sister, Maria Annunciata Caroline (1782-1839), wife of Murat, Marshal of France and King of Naples.

Left. Charles M. Bonaparte of Corsica (1746-1785). Napoleon's father. *Center.* Napoleon I, Emperor of France (1769-1821). *Right.* Lucien Bonaparte, Prince of Canino (1775-1840). Napoleon's brother. (From F. S. Delpeche, *Iconographie des Contemporains,* 1832, Paris, Vol. 1.)

FROM MAYO CLINIC RECORDS

Phillips[120] (1939) of the Mayo Clinic states that malignant disease of the stomach in a patient less than thirty years of age is uncommon. The records of the Mayo Clinic show that in the last thirty years there have been 90 instances of cancer and 6 of sarcoma of the stomach in persons less than 30 years of age. They were all surgical cases, and the diagnosis of malignancy was confirmed by biopsy, by finding the lesion at operation or by both procedures. There were 60 males and 36 females (nearly 2 to 1), and only 2 of the patients were less than 20 years—both were 18. Seventeen were between the ages of 20 and 24 years and 77 were between the ages of 25 and 30. Of the 6 sarcomas, 4 were lymphosarcomas, 1 was leiomyosarcoma and 1 an angiofibrosarcoma. Of the 36 females, 6 had Krukenberg tumors of the ovary, indicating that metastasis to the ovary is commonly associated with gastric malignancy in young females.

Norman Moore showed sections of the stomach taken from a girl 13 years of age before the Pathological Society of London in 1884. He thought it was one of the earliest, if not the very earliest, example of cancer of the stomach (with microscopical determination) till then recorded. The cancerous mass was less dense than most such new growths in the gastric wall, but resembled many such cases in the absence of secondary deposits. The mass was about 3 inches across, and was found at the cardiac end of the stomach close to the esophagus. The child's paternal grandmother died of carcinoma of the descending colon at the age of 53.

Ashby and Wright (1900) recorded a case of an 8 year old child with pea-sized nodules of cancer in the stomach and duodenum.

Hagerty and Gibson reported before the Chicago Pathological Society (May 9, 1932), a case of a child 3 years of age with carcinoma of the stomach. At autopsy there was found primary annular ulcerated glandular carcinoma (perforated) of the cardia of the stomach. There were multiple metastases to the liver and acute general fibrinous peritonitis.

Güttich[58] (1908) recorded an instance of ulcerating adenocarcinoma of the stomach with metastases in the liver and regional lymph nodes in a boy 14 years of age. Felix

Left. Marie Pauline, Princess Borghese (1780-1825). Napoleon's sister. *Center.* Hieronymus Capivaccius (Jerome Capo Di Vacca or Capivaccio) (died 1589). In his *Practica Medicina,* 1594, Frankfort, Book III, Chaps. IV and V, he wrote on "Tumore Ventriculi" and "Ulcere Ventriculi." *Right.* Maria Annunciata Caroline (1782-1839), wife of Joachim Murat (1767-1815), Marshal of France, King of Naples. Napoleon's sister.

Huch[64] (1904) reported a case of a boy 15 years of age with a palpable mass in the region of the stomach who had been vomiting for seven weeks and had complained of pain in that area. After admission to the hospital he had a severe gastric hemorrhage. There was no free acid in the gastric contents, but lactic acid was present. Gastroenterostomy was performed. The child died fifteen weeks after the beginning of the illness.

CANCER OF THE PYLORUS

L. Rütimeyer of Basel (1900) reviewed the literature and reported the case of a 15 year old boy who was sick with stomach trouble for three years. A palpable mass in the region of the stomach was present a year after the beginning of the illness. There was no free acid but lactic acid was present in the gastric contents. Gastroenterostomy was performed. A scirrhous cancer the size of a child's fist was found at the pylorus, extending to the lesser curvature and to the anterior wall. A month later the greatly obstructive pylorus was resected and as much as possible of the involved glands was removed. One and one-half years after the resection there was a recurrence, and the boy died after three years' illness.

C. J. Cullingworth of Manchester, England, exhibited at the forty-fifth annual meeting of the British Medical Association at Manchester (Aug. 10, 1887) the stomach of an infant who died from cancer of the pylorus at the age of 5 weeks. At birth, and for the first 9 days of life, the baby boy was to all appearance in good health. On the tenth day he began to vomit half an hour to an hour after taking food. The vomiting persisted in spite of all treatment, medicinal and dietetic, and was thought due to an obstruction situated high up in the alimentary canal. Emaciation increased from day to day. Convulsions manifested themselves 26 hours before the baby's death.

On postmortem examination the stomach was found dilated and hypertrophied, occupying almost the whole abdominal cavity. The right or pyloric half was greatly hypertrophied, the thickening gradually increasing towards the pyloric orifice. The

wall of the pylorus itself measured one-third of an inch in thickness. A small pear-shaped tumor, one inch in length, sprang from the inner surface of the lower border of the pylorus. It was softened and ulcerated at its center, and completely closed the pyloric orifice. Dr. Dreschfeld examined the specimen microscopically and reported that the tumor was a cylinder-celled epithelioma, with enormous hypertrophy of the muscular coat of the stomach.

WILLIAMSON'S CASE REPORT

Cullingworth, remarking on the extreme rarity of malignant disease of the stomach in infancy, referred to the only other case he had been able to find, namely, that of Dr. Thomas Williamson (Case of Scirrhus of the Stomach, Probably Congenital, *London & Edin. J. M. Sc.* (Jan. 1) 1841, pp. 23-24).

> The baby boy died at the age of five weeks. At birth it was plump and apparently healthy, but a few days afterward vomiting came on. The matter ejected was coagulated milk. During the last fortnight the bowels were obstinately constipated, and the child seemed to be falling off considerably in flesh, till it gradually sunk exhausted.
>
> Upon dissection the intestines were found collapsed and empty, and all the other visceral organs perfectly healthy, with the exception of the stomach, the pyloric extremity of which felt hard and indurated, forming a remarkable contrast to the soft and yielding parietes of that viscus when emptied of its contents. Upon removing the stomach, it was found that the pyloric orifice was so contracted as scarcely to admit a small silver probe, a state which might perhaps partly account for its being nearly filled with coagulated milk. Upon slitting open the pyloric orifice, it was evident that the tissues entering into the composition of the parietes of the stomach had greatly lost their normal appearance. The mucous coat was slightly thickened, while scarcely a distinct remnant of the middle or muscular tunic was observed. On the other hand, the submucous cellular tissue was so much hypertrophied and indurated that it seemed to be the only tissue contained between the mucous and peritoneal coats. Transverse white bands appeared to stretch from the subperitoneal to the submucous cellular tissue, through what formerly constituted the middle or muscular coat. Both parents of this child (their first) were healthy.

The specimen was exhibited before the Anatomical Society of Edinburgh, and the members agreed that it was a scirrhus of the pyloric extremity of the stomach. However, it may have been a case of congenital hypertrophic stenosis of the pylorus.

The cases reported by Bircher[14] (1907), Phillips,[120] Peugniez[117] (1924), R. P. Sullivan[148] (1924), Schwyzer[143] (1930) and several others are of particular interest. Sullivan,[148] in a recent letter to the writer, reported that his patient, J. M., a student, age 22 years, was operated upon for a large, irregular, ulcerating cancer of the stomach on March 29, 1922, at St. Vincent's Hospital, New York City, after a four months' illness. This patient "is now 41 years of age, married and enjoying vigorous health. He happens to be a brother of a physician, who keeps me informed concerning the follow-up."

Schwyzer[143] states that his patient was without recurrence twenty-four years after operation. Peugniez[117] reported a case of recovery from cancer following gastrectomy performed twenty-four years previously. R. Phillips and A. B. Rivers[121] reported two carcinomas involving the same stomach with an eleven-year interval between them. E. Bircher[14] reported a fifteen and a half year cure of cancer of the stomach.

A. O. Whipple of the Presbyterian Hospital, New York City, through his associate Dr. H. D. Harvey, recently informed me that they have had a number of five, ten and twenty year cures in cases of malignancy of the stomach following subtotal gastrectomy. Three lived for twenty years or more, seven for fifteen years or more.

"CANCER AGE"

There is no "cancer age." While the incidence of cancer in childhood and adolescence is, of course, less frequent than in later life, it must be remembered that *malignancy is no respecter of persons of whatever age*. No organ or tissue of the body is immune against malignancy—even in children and young adults. We have the early reports of malignancy of the stomach in young people by O. Kübel[84] (1848),

Dittrich[36] (1848), A. Pillon[122] (1856), J. Kaulich[71] (1864), J. B. S. Jackson[68] (1865), Werner[159] (1890), and perhaps 200 other instances of malignancy of the stomach in young patients.

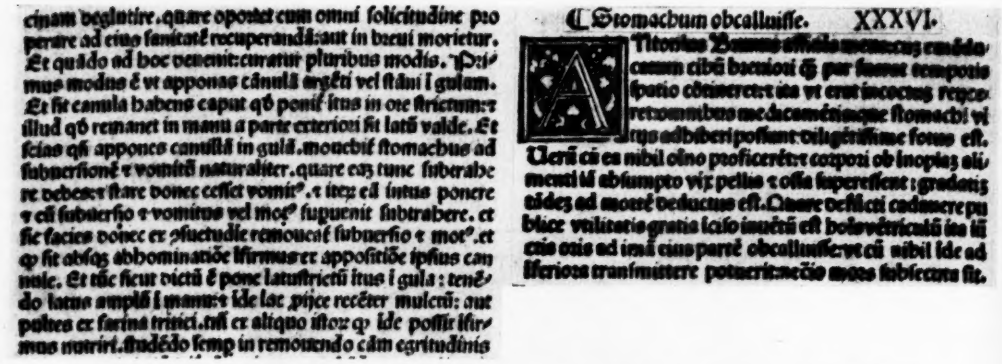
We also have the following reports which are of interest in this connection: girl 19 years; G. Kessler[73] (1939), an epithelioma of the cervix in a virgin 16 years old. Gusserow (1885), Schauta (1880), Mundé (1891), Braetz, Glatta (1870), Rosenstein (2 years old, 1887), and Ganghofner (9 years old, 1888), reported neoplastic lesions of the cervix, etc.

JEROME CARDAN (1501-1576)

Condat, Gadrat and Lasserre[30] (1938) report a case of epithelioma of the pharynx in a child 9 years old; A. G. Langmann and H. Bruch[86] (1938), a case of carcinoma of the thyroid gland; L. H. Fowler[43] (1915), an adenocarcinoma of the rectum in a boy 15 years old and scirrhus cancer of the breast in a young woman 19 years of age; Bacon and Sealy[3] (1939), a case of cancer of the rectum in a boy only 4 years and 7 months old; P. Wasserman and J. Epstein[156] (1939), a congenital cancer of the thymus; H. A. McKnight[97] (1939), a malignant parotid tumor in a newborn; H. Charache[29] (1939), a case of cancer of the cervix in a

Bertroye, Bertrand and Muller[11] (1939), reported cases of epitheliomas of the kidney in infants and children. V. Wentz and K. Kato[158] (1940), P. Martin[101] (1940), D. Drummond and J. Tollman[37] (1939), R. Webster (1938, a 2 year old boy), M. M. Steiner (1938, 2 babies), H. J. Hamberger (1937, a 5 year old child), H. Wood (1938), H. Schlesinger[137] (a 4 year old boy), and many others reported cases of primary cancer of the liver in children. Probably about 100 such cases have been recorded.

J. Tenenbaum[150] (1939) reported on cancer of the adrenal cortex in infants and



Left. Avenzoar (1090?-1162), "Liber Primus," Tract X, Chap. XVIII, in *Liber Theizir*, 1497, Venice. Avenzoar clinically described cancer of the stomach and esophagus, and used silver and tin esophageal sounds (cannulas). *Right.* Antonius Benivieni (died 1502), *De Morborium Mirandis*, 1516, Chap. XXXVI, p. 70. Autopsy, case of cancer of the stomach.

children; E. I. Kefeli and V. O. Silenchuk[72] (1940) recorded pulmonary cancer in a girl of 18 years; Rawls[127] (1940), a case of cancer of the colon in a girl of 13 years. C. J. MacGuire, Jr.[95] (1939) reported adenocarcinoma of the tranverse colon in a boy of 15 years, and Walker and Daly's[153] (1934) patient was a 5 year old boy with cancer of the colon. Pfeiffer and Wood's[118] (1935) case of cancer of the transverse colon was in a 7 year old boy. L.S. Mackid[96] (1916) reported sarcoma of the intestines in a child 7 years of age. V. Brun's[21] (1912) case was a baby with fusocellular sarcoma of the intestines, while von Bokay's[17] (1913) patient with large cell sarcoma of the bowel was a 9 months' old baby.

Walther Butz[25] (1900) reported an adenocarcinomatous ulcer of the duodenum with pancreatitis (?) in a woman of 29 years. Her father died of cancer of the stomach. Professor Bier operated upon the young woman. Joseph H. Branham of Baltimore (1903) reported duodenal and pyloric cancer in a young man of 20 years. The pathologic studies were made by Professor Welch, who reported "malignant adenoma of the pylorus, originating from misplaced pancreatic tissue." The man was well nine years after the resection. Geoffrey Jefferson of Victoria, B.C. (*Brit. J. Surg.* 4:209-226, 1916) collected 30 cases in which cancer seemed to have developed upon ulcer, and he includes the complete list of such recorded instances.

DUODENAL ULCER

A number of cases of duodenal ulcer in infants and children have been recorded in medical literature. At a meeting of the Royal Society of Medicine, Section for the Study of Disease in Children, November 27, 1908 (*Brit. J. Child. Dis.* 5:522 (Dec.), 1908), Cecil E. Finny exhibited a specimen of duodenal ulcer in a child aged two months, terminating in perforation. Edmund Cautley in discussion said: "The ulcers gave rise to pyloric spasm, and the pylorus was found to be very much constricted after death. Yet there was no evidence of any distinct hypertrophy of the muscle of the pylorus."

Duodenal ulcers in children were reported by Bermond (1933); N. D. Gannon (1935), a 5 year old boy; Carrick (1924); H. Gjankovic (1937), an infant 22 months old; Dickey (1926); R. W. John (1938), a 6 year old child; J. A. L. Luodon (1925), a baby 2 months of age; F. Menna (1937), a child 9 years old; E. Neter (1926), a 2 months' old baby; Cecil E. Finny (1908); D. Moritz (1935), a child 2½ years old;

H. Wurm (1927), a 7 weeks' old infant; J. S. Y. Rogers (1928), 2 infants; R. Prevot (1935); C. Pedrazzi (1927); E. Polacco (1935); J. Karstad (1923); W. D. Palmer (1920); A. Muggia (1933); H. P. Wright (1924); L. Opazo and F. Daza (1934), children 10 and 12 years old; G. F. Brockington and Lightwood (1932), 2 infants; Bird (1940); and others.

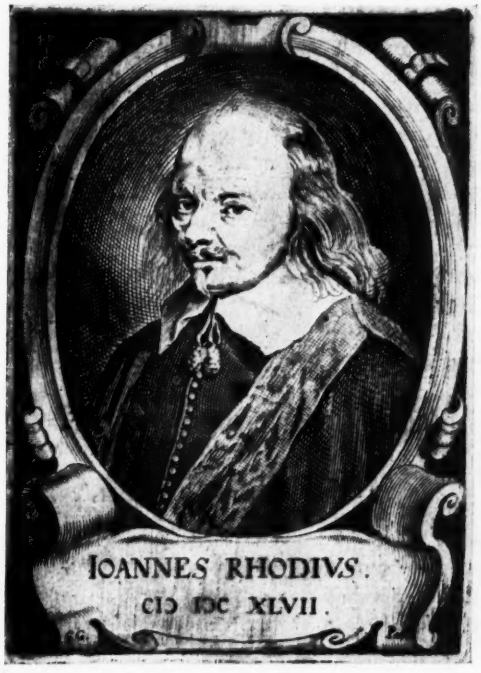
CANCER OF THE COLON

It might be of interest to note here some additional case reports of juvenile cancer of the colon: A. Correa Netto (1935), a 10 year old child; C. J. Hunt (1932); D. Kaplan (1928); A. Mouchet and A. Baranger (1923), a 10 year old child; D. B. Pfeiffer and J. K. W. Wood;[118] F. Pouzet (1933), a boy 14 years old; H. I. Rocher *et al.* (1931), an 11 year old; J. M. Wainwright (1925), a child under 16 years; Wakeley (1933), a boy of 16; Warthen (1937); and G. Solente and Baranger (1925), a child 10 years of age.

In this report an attempt is made to emphasize the need for more consideration of the occasional possibility of malignancy in childhood and adolescence. It has also been shown that malignant conditions in childhood and early adult life progress very rapidly to a fatal issue. This was particularly emphasized by Mathieu[102] (1884, 1895), Osler and McCrae[111] (1900), and James Ewing, also by H. Schlesinger[137] (1916), who stated that in such cases the disease takes on a "galloping" course.

No tissue or organ of the body is entirely immune to involvement in the malignant process. Gairdner in 1828 reported the first case of sarcoma of the kidney. In 1899 Wilms published his monograph, and during the past quarter of a century a considerable number of malignant neoplasms of the kidney have been recorded. C. C. Higgins and F. L. Shiveley, Jr., of Cleveland published a review of 26 cases (*Arch. Surg.* 42:386-394, 1941).

Hayes E. Martin, in Harold W. Dargeon's *Cancer in Childhood* (St. Louis, C. V. Mosby Co., 1940, p. 72) mentions cancer of the upper lip in a baby of 20 months and in a boy of 11 years. Shane[144] (1939) reported a case of tumor of the testis in an infant. Gery and Milaras[46] reported two cases of stratified pavement epithelioma of the eyelid and conjunctiva (1938).



JOANNES RHODIUS (1587-1659)

ADDITIONAL REPORTS

Not previously mentioned are the following cases, ranging from 1567 to 1940:

Jean Fernel speaks of "scirrhous tumor of the stomach" in his *Universa Medicina* (1567, Liber VI, Caput I, p. 288). In 1716 Petit reported in the *Histoire de L'Academie Royale des Sciences* (pp. 395-407) an "Observation sur un ulcère carcinomateux et fistuleux qui perce le fond de l'estomac" in a patient 35 years old.

Andry in 1776 reported on "Observations sur le squirre du pylore"—"On ouvrit

son cadavre et on trouva un ulcère chancreux a l'orifice inferieur de l'estomac," extending along the pylorus and the upper part of the duodenum (*Histoire de la Societé Royale de Médecine*, Paris, 1776, pp. 257-265).

In 1780 Amilhon[164] saw a young woman of 22 years with a scirrhus of the pylorus (*J. de méd. chir. pharm.* 57:137-146 (Feb.), 1782).

N. Anciaux[165] (1816) recorded a congenital scirrhus of the pylorus (*Clin. Chir.* p. 210, 1816). Francois Arnaud[167] reported a case of a young girl 19 years of age with cancer of the cardia (*Marseille méd.* 26:468-482, 1889).

Other cases of interest are those reported by L. Landouzy[190] (1873), Humbert Molliére[199] (1888), A. Mathieu[197] (1895), George Dock[178] (1897), V. K. Mlodzieyevski[198] (1901), R. Kihuchi[186] (1902), V. Pauchet[115] (1903), M. Mada[98] (1905), R. Bosquier[174] (1906), H. Essard[179] (1907), U. Monnier[200] (1908), G. F. Koehler[188] (1910), Eduard Kaufmann[184] (1921) and J. G. Macleod and R. B. Baird[196] (1940).

In 1884 Riegel treated a man of 33 years, who for eighteen years had suffered from stomach trouble (ulcer), and was found to have cancer of the stomach and mesenteric metastases.

I. S. Ravdin of the University of Pennsylvania Hospital recently operated on a young man of 24 years for cancer of the stomach; he was still well after eighteen months, when he committed suicide.

Macleod and Baird[196] (1940) collected 10 cases in persons aged 30 years and under out of approximately 700 cases of cancer of the stomach treated in the Royal Infirmary, Edinburgh, from January, 1934, to January, 1940. Four were 29 years of age, 2 were 27, 2 were 25, 1 was 24; the oldest of the group was a woman 30 years of age who had extensive involvement of the stomach and omentum.

Albert Piot[204] (1911) mentions F. Seitz's case (1866) of a woman 28 years of age who had cancer of the stomach with involvement of the suprarenal and kidneys.

Walters, Gray and Priestley of the Mayo Clinic (*Proc. Staff Meet. Mayo Clinic*, 15:625-640 (Oct. 2), 1940) in a report on malignant lesions of the stomach, 1907

WILHELM FABRICUS HILDANUS (1560-1634)

through 1938, state that in a total of 2,772 cases (resected) of cancer of the stomach, they found 24 cases between 20 and 29 years of age and 183 cases between 30 and 39 years of age. Thirty-two patients (of 2,772) survived fifteen years or more after leaving the hospital; of these, 6 survived twenty-five years or more after the resection.

Richard Herman Jaffé (*Pathological Conferences*, Chicago, C. C. Guy, 1940, pp. 615-617) reports a case of adenocarcinoma of the lesser curvature of the stomach in the prepyloric region, with intestinal obstruction, in a white woman 29 years of age. Jaffé also reports scirrhous cancer of the stomach in a Russian male age 37 years

Opera Observationum et Curationum Medico-Chirurgicarum, by Wilhelm Fabricus Hildanus (Frankfort, 1646).

(p. 328) and ulcerated adenocarcinoma of the cardia of the stomach with perforation and retrogastric abscess and metastases in a negro 39 years old (p. 1115).

Leon Theodore Le Wald refers to a case of cancer of the stomach in a young woman 23 years of age (*J.A.M.A.* 96:179-183 (Jan. 17), 1931). Reference should be made here to the recent statistical review by Gordon McNeer (*Am. J. Roentgenol.* 45:537-549 (April), 1941). He reports 272 collected cases of primary cancer of the stomach in patients under 30 years of age; 214 were 25 years and under; 18 were 15 years and under. McNeer adds 5 cases of primary gastric carcinoma seen at the Memorial Hospital in patients between 24 and 30: 2 females 25 years old, 1 female 24 years, 1 female 27 years and 1 male 30 years. He also mentions an additional case of a young woman aged 23 years.

Frank H. Lahey reports 5 surgically successful cases of complete gastrectomy (*Surg., Gynec. & Obst.* 67:212-223, 1938). Among these were a woman of 27 years with leiomyosarcoma of the stomach and a woman of 36 years with colloid carcinoma of the linitis plastica type.

CONCLUSIONS

To summarize—after a fairly careful review of the available medical literature of the world during the past one hundred years, or since the published report of scirrhus of the stomach in an infant by Williamson in 1841, there have been recorded approximately 250 cases of malignancy of the gastrointestinal tract in infants, children and young adults under 26 years of age. On account of limited space, only something over 200 references are listed in the bibliography. Many more references were studied in the preparation of the paper.

SUMMARY

There is no cancer age. Malignancy may involve any tissue or organ of the body at any age period.

The author, after a fairly thorough study of the available literature of the world, has found more than 350 recorded instances of primary malignancy of the gastrointestinal tract in patients under twenty-five years of age. Malignancy progresses rapidly in the young.

In addition to several cases observed by himself and others, the author presents historical data and a considerable review of the literature. An extended bibliography is appended.

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RÉSUMÉ

Carcinome de l'estomac dans les enfants et les jeunes adultes

Un âge pour les tumeurs n'existe pas. Des tumeurs malines peuvent atteindre chaque tissue ou organe du corp dans chaque âge.

L'auteur après un étude assez complet de la litterature mondiale, a trouvé rapporté plus de 350 cas de tumeurs malines primaires du canal digestif dans des malades au dessous de 25 ans. Les tumeurs malines progressent rapidemment dans les jeunes gens. L'auteur ajoute à des nombreux cas observés par lui même et par des autres, des données historiques et une considerable rêvue de la litterature. Une étendue bibliographie est ajoutée.

ZUSAMMENFASSUNG

Magenkrebs bei Kindern und jungen Personen

Es gibt kein Krebsalter. Malignität kann jedes Körpergewebe oder Organ in jedem Lebensalter ergreifen. Nach einem ziemlich gründlichen Studium der zur Verfügung stehenden Weltliteratur, fand der Autor

über 350 veröffentliche Fälle von primärer Malignität des Magendarmtraktes bei Patienten von unter 25 Jahren. Die Bösartigkeit ist bei jungen Personen sehr progressiv.

Im Zusatz zu mehreren von ihm selbst beobachteten Fällen, gibt der Autor historische Daten und eine beträchtliche Uebersicht der Literatur. Eine ausgedehnte Bibliographie ist angeschlossen.

SUMARIO

Cáncer del estómago en los miños y adultos jóvenes

No hay edad para el cáncer. El crecimiento maligno puede invadir cualquier tejido u órgano del cuerpo a cualquiera edad.

El autor, después de un estudio bastante amplio de la literatura de que se dispone en el mundo, ha encontrado más de trescientos cincuenta casos registrados de malignidad en las vias gastro-intestinales en enfermos menores de veinticinco años. El crecimiento maligno progresa con rapidez en los jóvenes.

Además de los varios casos observados por él y otros, el autor presenta datos históricos y una revista considerable de la literatura. El trabajo tiene una estensa bibliografía.

RIASSUNTO

Carcinoma dello stomaco nei bambini e nei giovani adulti

Non esiste un'età per i tumori. Processi maligni possono involvere ogni tessuto od organo del corpo in ogni età.

L'A., dopo uno studio abbastanza accurato della letteratura mondiale ha trovato riportati più di 350 casi di tumori maligni primari del canale gastroenterico in pazienti al di sotto dei 25 anni. I processi maligni progrediscono rapidamente nei giovani.

In aggiunta a numerosi casi osservati da lui stesso e da altri, l'A. presenta dati storici e una considerevole rivista della letteratura. Un'estesa bibliografia è aggiunta.

Editorials

Pan-American Medical Cooperation

WHEN less than forty years ago, Nicholas Senn, eminent scientist, surgeon and teacher, paid a long visit to medical teaching centers in South America and published in the *New York Medical Record* his experiences and findings, he brought to us our first knowledge of the standards of medical teaching and practice in Latin America.

He found then, as is still true, that the dominant influence was that of European medical centers. Premedical preparation was patterned and yard-sticked by European requirements, and the greater number of medical students from Central and South America pursued their education for the most part in France and Germany, complemented by further observations in the schools of Vienna, Italy and England. Until recent times the standard textbooks in the medical schools of Latin America favored the French authors, and every medical student possessed reading knowledge of French. The best known and most popular authors of books and articles were therefore of French vintage. The library of the undergraduate and post-graduate student was largely made up of Spanish and French authorities. Curiously enough, this European influence ran parallel with the economic and political aims of the nations of the old world seeking preference and favor in this new world of ours.

For some years past, North American medicine and medical literature have been gaining favor in the Americas to the south. Day by day their students patronize our schools in increasing numbers. Our hospitals, laboratories and research activities are in greater favor today than ever before. A new era of influence for the American School of Medicine is today dawning, with great opportunity for the internationalization of North and South American medical cooperation.

Prerequisite, however, to the realization of Pan-American medical ideals are:

First, negotiations for required teaching of English and Spanish in the premedical curriculum.

Second, uniform minimum requirements for admission to medical schools throughout the Americas, thus clearing the way for interchange of internships and residencies in our hospitals. The well-known system in vogue in Germany has been uniform basic requirements of the medical schools in the various states of the German Federation, thus enabling a medical student to frequent two or more universities and eventually present his thesis and take his degree wherever he prefers within the realm.

Granting the existence or possible development of countless obstacles to such a goal, an approach should be unhesitatingly made, with the conviction that certain incompatibilities can be eliminated, and that those at first found invulnerable may in time undergo adjustment.

There exist among the medical men of Latin American centers genuine enthusiasm for and clear realization of the advantages

to be secured by intimate community of effort with North American activities. At no time in medical history has there been a more auspicious moment for fostering the cause of Pan-American medical cooperation, infinitely more comprehensive and enduring a cooperation than that achieved through the channels of political diplomacy and messengers of good-will.

The Pan-American Medical Association and the International College of Surgeons are the vehicles through which better understanding and scientific cooperation between the medical centers of the Western Hemisphere can be attained.

Let us dedicate ourselves to this far-reaching objective; we have the ways and means and momentum of accomplishments assuring ultimate success.

A. L. WOLBARST

Postural Exercise After Surgical Procedures

IN primitive society the female bears her young and very soon thereafter gets up, cares for her infant and herself. From time to time the various members of the obstetrical profession have been so bold as to advocate the advantages of getting the normally convalescent obstetric patient out of bed the day after delivery. However, most physicians have been loath to run counter to long-established custom.

About twenty-five years ago one of the leading obstetricians of Vienna conducted an experiment on two parallel series of deliveries, one hundred in each category. One group was kept in bed for the customary nine or ten days, the other was gotten up beginning the day after delivery. The results were most markedly in favor of the ambulatory cases, there being a decidedly smaller incidence of complications and a much speedier convalescence.

For a good many years various European surgeons, more particularly the German and Austrian, have been adopting the routine of having their major surgical cases, when possible, get out of bed routinely and regularly, beginning, as a rule, the day following operation. They have found a great improvement in the general results, there being a marked lessening of chest complications, ileus and thrombosis. Many of our leading internists have long recognized the fact that patients having mild chest infections get along better if they sit up in a chair at least part of each day.

During a large part of our surgical experience we have had a considerable number of patients get out of bed early following major operations, such as laparotomies and herniorrhaphies. During the past ten years this custom has grown steadily in our practice, and for the past four years nearly all of our operative cases not running high temperatures have been out of bed at least twice every day. They are encouraged to sit up as long as they like, to walk about the room, always to get up when they need to evacuate bowels or bladder. We have noted marked absence of complications, chest and otherwise, greatly improved morale and much speedier recoveries than when they are kept in bed. These conclu-

sions have been arrived at after observing the results in several hundred cases treated in accordance with the methods described.

In our opinion the custom of keeping patients in bed following major operations is not based on sound logic or physiology, but rather on time-honored custom, also in part on the use of uncertain suture material and the fear of possible wound disruption. (Improved methods of wound closure have all but eliminated the last-mentioned factor.)

The clinical results of the use of early postural exercises have been shown to be infinitely superior to absolute rest. This is true of both gynecologic and general surgical cases, including hernias.

J. E. CANNADAY

POST GRADUATE TEACHING FOR MEMBERS AND FELLOWS

Under the Auspices of the United States Chapter of the International College of Surgeons and Its Post Graduate Study Guilds

In performance of its educational program, the United States Chapter of the International College of Surgeons will initiate in October special courses of instruction in anatomy, both topographic and regional. This will cover surgical procedures, surgical anatomy and autopsy instruction, with special reference to macroscopic recognition of tissue changes and morbid anatomy; and will be supplemented with microscopic and histologic confirmation of macroscopic tissue changes in disease. These courses of instruction will be made of special interest through clinical demonstrations by surgeons, in coordination with the Credential privileges extended to members and affiliates of the Chapter.

The courses will be given by specialists, using adequate equipment and material, for the benefit of affiliates of the United States Chapter of the International College of Surgeons in Philadelphia, New York, Chicago, Toledo, Ohio, and at Creighton University, Omaha, Nebraska, where affiliates of the Nebraska Post Graduate Study Guild will be given excellent opportunities for basic instruction in surgery.

This is but the beginning of a far-reaching program of post graduate instruction carrying out the aim of the United States Chapter of the International College of Surgeons, to afford ample facilities for the elevation of surgical performance and teaching of its affiliates and members.

Further announcements will be made in the Journal of the International College of Surgeons as to exact locations, dates and instructors.

The President's Page—United States Chapter

THE Assembly of the International College of Surgeons, held in Mexico City from August 10 to 14 at the special invitation of the Mexican Government and conducted against the brilliant background offered by the natural beauties of that historic country, was one of the most notable scientific gatherings that the imagination can depict.

The Organization Committee, in charge of all arrangements for both social and professional entertainment, arranged a surgical program which probably gave greater evidence of the progress of our art than anything yet recorded. Never before in the history of medical gatherings has scientific achievement been represented on so worldwide a scale as in the Scientific Program of the International College of Surgeons; for, notwithstanding the current world crisis, Europe, Asia, Africa and the Americas were all represented at this notable gathering.

Our congratulations go to the Comité de Organizacion for Mexico, for their splendid preparations and the energy with which they set themselves to their task for several months preceding the convention. We are conscious of the virtues inherent in the spirit of cooperation which prevailed from the very beginning of the plans for the Congress to the day of its realization.

As is the custom in international medical programs, the various papers were grouped according to special subjects, allowing full development of the material under discussion. Each essayist was followed by a commentator who initiated the discussion, participated in by specialists of different nationalities in a worldwide interchange of medical experiences. In order to facilitate complete understanding between the speakers and their listeners, competent interpreters summarized the leading points of each address with the approval of the speaker.

Attesting the interest in the Convention felt throughout the medical world was the experience of the chairman in the arrangement of the scientific program; last-minute cancellations necessitated by individual circumstances were to be expected, but for every cancellation reaching us in the mail, there were two or three new applications for a place on the program, bespeaking a general appreciation of the unusual opportunities offered to the surgical profession by the International Assembly of the International College of Surgeons.

The United States Chapter had extraordinary success in promoting the scientific material to be presented by the Chapter. We must be proudly conscious of the part played by the United States Chapter in giving impetus to the Convention and in collaborating in all possible ways to insure its success, yet at the same time maintaining its many-sided activities. We will long look back on this exceptional opportunity of witnessing an epoch-making gathering in the history of modern surgery.

DESIDERIO ROMÁN, M.D., PRESIDENT

NEWS ITEMS

Dr. Rankin New Head of American Medical Association

Again a surgeon of international repute has been elected by the House of Delegates of the American Medical Association to the highest honor in its province. Dr. Frederick Wharton Rankin, who was born in Mooresville, North Carolina, on December 20, 1886, received his M.D. from the University of Maryland in 1909. He was resident surgeon at the University Hospital in Baltimore from 1909 to 1912 and assistant demonstrator of anatomy and associate in surgery at the University of Maryland Medical School from 1913 to 1916. He then joined the Mayo Clinic in Rochester, Minnesota, acting as assistant surgeon at St. Mary's Hospital, 1916-1923. He was professor of surgery at the University of Louisville, 1922-1923. From 1926 to 1933 he served as surgeon to the Mayo Clinic and as associate professor at the University of Minnesota Medical School.

He then moved to Lexington, Kentucky, where he became surgeon to St. Joseph's and the Good Samaritan hospitals.

In the World War Dr. Rankin served as a major in the Medical Corps for seventeen months and was commanding officer of Base Hospital No. 26. He is now a colonel in the Medical Reserve Corps. He has held the presidency of the Southern Surgical Association and the Southeastern Surgical Congress. He is a fellow of the American College of Surgeons and a member of the American Surgical Association, American Proctologic Society, Eastern and Western Surgical Associations, Southern Medical Association and many surgical clubs and medical fraternities. He was one of the founder members of the American Board of Surgery.

In the American Medical Association Dr. Rankin has been especially active. He was a member of the House of Delegates, representing the Section on Surgery, from 1935 through 1940. In 1936 he was appointed to the Council on Medical Education and Hospitals, and in 1940 to the Committee on Medical Preparedness.

His contributions to medical literature include a monograph on "Surgery of the Colon;" a work on "The Colon, Rectum and Anus," published in 1932 jointly with Drs. J. A. Bargen and L. A. Buie, and a work on "Cancer of the Colon and Rectum," published with Dr. A. S. Graham in 1939.

In 1923 Dr. Fred W. Rankin married Miss Edith Mayo, a daughter of Dr. Charles H. Mayo; they have four children: Frederick Wharton, Edith Graham, Charles Mayo and Thomas Alexander.

DR. FREDERICK W. RANKIN

Award of the Medals of the American Medical Association

The gold medal of the American Medical Association, given annually for exhibits based on individual investigations, was presented on June 4 at Cleveland to Professor A. C. Ivy of the Northwestern University Medical School, and his associates, Drs. Alvin L. Berman, F. S. Grodins, H. Wigodsky, B. Phibbls and A. J. Atkinson, for their exhibit demonstrating the proper use of bile salts in disorders of the liver and the gallbladder. The silver medal was awarded to Drs. Harold Thomas Hyman, William Leifer and Louis Chargrin of Mt. Sinai Hospital, New York, for an exhibit describing massive-dose chemotherapy of early syphilis by the intravenous drip method. The bronze medal was awarded to the Mayo Foundation for the investigation of physiological problems in aviation medicine conducted by Drs. Walter M. Boothby, W. R. Lovelace, C. W. Mayo and A. H. Bulbulian.

Three medals were given for exhibits not devoted to experimental investigations. Of these, the gold medal was awarded to Drs. Waltman Walters, Howard K. Gray and James T. Priestly of the Mayo Clinic, for an exhibit on cancer of the stomach, demonstrating the importance of early treatment. The silver medal was received by Drs. Grover C. Penberthy and Charles N. Weller of the Children's Hospital of Michigan and the Wayne University College of Medicine, for an exhibit illustrating the treatment of burns. The bronze medal was presented to Dr. G. V. Brindley of the Scott and White Hospital, Temple, Texas, who illustrated operations for cancer of the colon. There were also four certificates of merit and six honorable mentions in this group of exhibits.

The distinguished service medal for scientific achievement of the American Medical Association was presented to Dr. James Ewing, an authority on cancer, formerly director of the laboratories of Memorial Hospital, New York City.

Appointments

Dr. Robin C. Buerki, medical superintendent of the General Hospital of the State of Wisconsin, at Madison, has been appointed dean of the Graduate School of Medicine of the University of Pennsylvania, to succeed Dr. George H. Meeker, who will retire on October 1. In addition, Dr. Buerki will fill the newly established position of director of the university hospitals at the University of Pennsylvania.

Personals

Dr. John H. Northrup of the Rockefeller Institute for Medical Research, Princeton, New Jersey, received the doctorate of science from Rutgers University on June 8.

Dr. Ernest Sachs, professor of neurological surgery at Washington University, St. Louis, has been elected an honorary member of the Royal Society of Medicine.

The Cuban National Society of Surgery has elected the following officers for 1941 and 1942: president, Dr. Ernesto R. de Aragon; vice-president, Dr. Felix Pages; secretary, Dr. Ricardo Machin; assistant secretary, Dr. Antonio Rodriguez Diaz; treasurer, Dr. Luis F. Ajamil; assistant treasurer, Dr. Amador Guerra.

Obituaries

Dr. Julius Friedenwald, professor emeritus of gastroenterology at the Medical School of the University of Maryland, a member of the faculty for more than forty years, died on June 8 at the age of seventy-four.

D'Arcy Power, K.B.E., B.M. (Oxford), F.R.C.S., F.S.A.

THE death of Sir D'Arcy Power at Northwood, England, at the age of eighty-five years, brings to a close a busy life as surgeon, historian, bibliographer, lecturer, librarian, antiquarian, and soldier, to mention a few of his manifold activities.

In 1878 he entered St. Bartholomew's Hospital as a student; in 1920 he left as consulting surgeon and governor, having held the position of curator of the museum, assistant surgeon, demonstrator in surgical pathology, head of the throat department and finally full surgeon. At the Royal College of Surgeons he served as Hunterian professor, Bradshaw lecturer, Vicory lecturer, Hunterian curator, honorary librarian and trustee.

He was an honorary fellow of the Royal Australian College of Surgeons and of the Faculty of Physicians and Surgeons of Glasgow, and was a member of innumerable societies in England, the Continent and America. A territorial officer before the last war, he was promoted to lieutenant-colonel in 1914 and put in charge of the first London General Hospital.

He was as much interested in the history of medicine as in its procedures, and from an early age on wrote constantly on the subject. "I have always been able to write," he said, "and that is my greatest asset." His learned writings numbered close to a thousand and he became widely known as a narrator of surgical lore and widely accepted as the surgeon's biographer. His collection of early printed books on surgery and medicine was choice and large. A series of six lectures given at Johns Hopkins Hospital in 1930 served to make him especially well known, respected and loved in this country.

IN MEMORIAM
DR. ROBERT M. ROGERS, F.I.C.S.
—
BROOKLYN, N. Y.

BOOK REVIEWS

A Surgeon Explains to the Layman. By M. Benmosche, M.D. Pp. 317, with 62 illustrations. New York: Simon and Schuster, 1940.

THIS work is a transcript from experience. The scientific knowledge of the surgeon has been translated into the language of the average man. While a little knowledge may be dangerous, no knowledge is worse. The layman of today demands information about matters medical. He refuses to step off in the dark. Dr. Benmosche regards this interest as a healthy one and meets it with honesty and frankness. As Dr. Howard Lilienthal states in the foreword, the work is not at all intended for the surgeon but aims to give the layman valuable and authoritative information. At a time when cultists are resorting to the radio, press and lecture platform to dispense much incorrect and downright vicious misinformation, the work of Dr. Benmosche is highly apropos. It fulfills the mission for which it was intended.

With drawings very much to the point, supported by clear explanatory text, the patient is led through the fog surrounding his treatment to a clear idea of what is before him. Written in an open, engaging style, every chapter clearly sets forth information, questions and answers. The material is not unduly simplified but rather compiled with respect for the reader's intelligence. The author proves himself well qualified to have undertaken the task which he has accomplished well.

J. C. B.

The Diagnosis and Treatment of Diseases of the Esophagus. By Porter P. Vinson, B.S., M.A., M.D., D.Sc., F.A.C.P., Professor of Bronchoscopy, Esophagoscopy and Gastroscopy, Medical College of Virginia, Richmond. Price, $4. Pp. 224, with 98 figures. Springfield, Illinois: Charles C. Thomas, 1940.

THIS work is based on the author's experience with approximately 3,000 patients, most of whom were treated during the 20 years that the writer was in charge of peroral endoscopy at the Mayo Clinic. The book begins with a discussion of the general management of patients who have difficulty in swallowing. Methods of esophagoscopy and the indications for its use are next discussed. The succeeding chapters are devoted to the various ailments of

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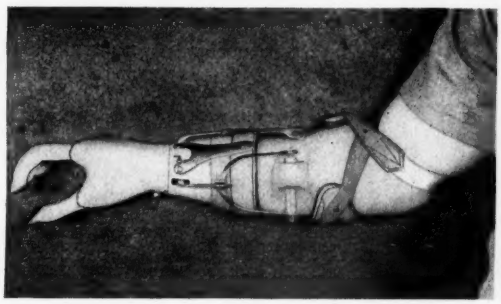

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the esophagus, including hysterical dysphagia, better known as the Plummer-Vinson syndrome. This syndrome is usually found in women over 40 years of age, most of whom are not outwardly neurotic. Prolonged fear of choking results in secondary anemia and avitaminosis. Usually the blood picture is sufficient to differentiate this condition from pernicious anemia. Treatment consists of a well-balanced diet, extra minerals and vitamins, esophagoscopy and relief of the fear of choking. Strictures of the esophagus should rarely be treated by gastrostomy. The author describes the method which he, Dr. Henry Plummer and Dr. Herman Moersch used in cases at the Mayo Clinic. The patient is made to swallow thread until the free end finds its way into the small bowel. There it becomes sufficiently attached for traction to be exerted on it. By following this thread, the surgeon passes olive-shaped dilators down through the obstruction. After the constricted portion has been dilated to size 60 French, the hydrostatic dilator of Russell (described in 1898) can be inserted without danger. The preliminary use of the sound is so effective in eliminating danger of rupture of the esophagus that Vinson had seen no death from this cause in the last 450 cases treated in this manner. This method is preferable to gastrostomy because the latter is associated with a high mortality, is rarely palliative in cancer of the esophagus and is unnecessary in the majority of cases of benign obstruction. Other diseases treated in this work are tumors, tuberculosis, esophagitis, fistula, perforation and foreign bodies. The book should interest the surgeon, the internist and the rhinolaryngologist.

M.

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